



DEPARTMENT OF PURCHASING & CONTRACT COMPLIANCE

Winner 2000- 2006 Achievement of Excellence in Procurement Award
National Purchasing Institute

Jerome Noble, Director



December 4, 2006

Re: **07ITBBELLROADPHASE-1**
R002 Bell Road Reuse Water Main Extension Phase 1

Dear Bidders:

Attached is one (1) copy of Addendum 1, hereby made a part of the above referenced *Bid #07ITBBELLROADPHASE-1, R002 Bell Road Reuse Water Main Extension*.

Corrections:

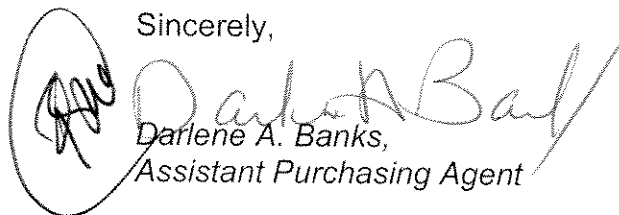
Appendices, at the end of "Design and Construction Standards for Non-Potable, Reuse Water Lines '2005", add the following **Appendix A**, which reference drawing numbers R-1 thru R-38.

Contact number for procedural or technical questions is (404) 730-7879; fax: (404) 893-1745.

Address for McGraw Hill Construction Dodge for viewing is 2129 Northwest Parkway, Suite 105, Marietta, GA 30067.

Except as provided herein, all terms and conditions in the Bid referenced above remain unchanged and in full force and effect.

Sincerely,


Darlene A. Banks,
Assistant Purchasing Agent

**07ITBBELLROADPHASE-1, R002 Bell Road Reuse Water Main Extension
Phase-1**

Addendum No. 1

Page Two

This Addendum forms a part of the contract documents and **modifies** the original Bid documents as noted below:

See attached documents

ACKNOWLEDGEMENT OF ADDENDUM NO. 1

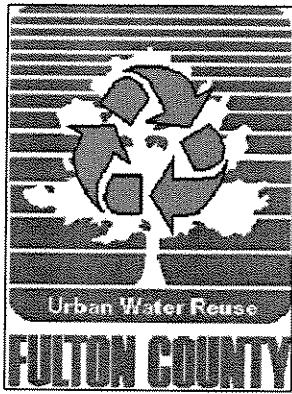
The undersigned proposer acknowledges receipt of this addendum by returning one (1) copy of this form with the proposal package to the Purchasing Department, Fulton County Public Safety Building, 130 Peachtree Street, Suite 1168, Atlanta, Georgia 30335 by the Bid due date and time on Thursday, January 11, 2007 at 11:00 A.M.

This is to acknowledge receipt of Addendum No. 1, _____ day of _____, 2006.

Legal Name of Bidder

Signature of Authorized Representative

Title

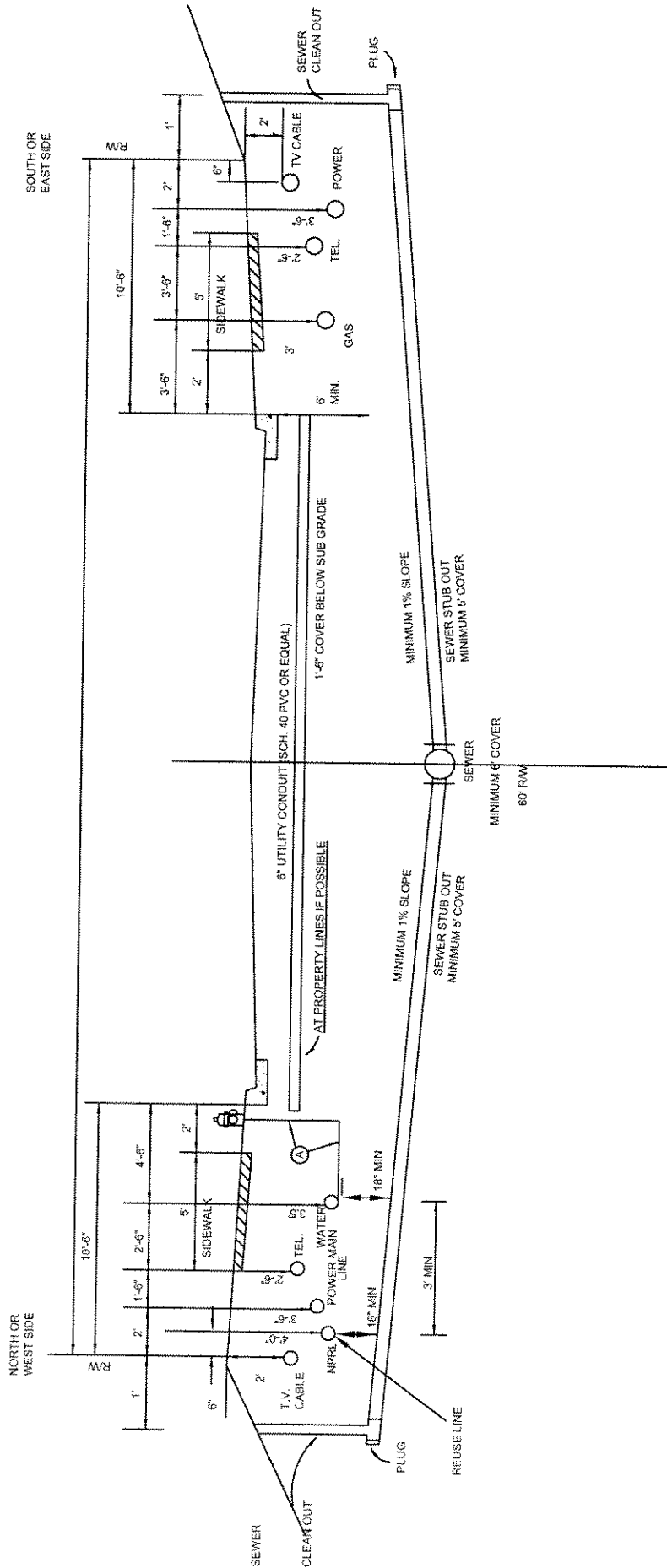


FULTON COUNTY DEPARTMENT OF PUBLIC WORKS

DESIGN AND CONSTRUCTION STANDARDS FOR NON-POTABLE, REUSE WATER LINES

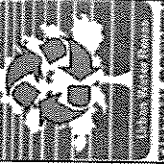
APPENDIX A

| Drawing # | Title | Drawing # | Title |
|------------------|--|------------------|--|
| R-1 | UTILITY LOCATION DETAIL | R-19 | 1" METER INSTALLATION |
| R-2 | 3/4" - 1" METER SETTINGS SHORT AND LONG SIDES | R-20 | 1 1/2" METER INSTALLATION |
| R-3 | MAIN EXTENSION BLOCKING DETAILS SUBDIVISION INTERSECTION DETAIL VALVE AND MAIN | R-21 | 2" METER INSTALLATION |
| R-4 | TYPICAL PIPE HANGER AND SUPPORT DETAILS | R-22 | LARGE METER AND VAULT INSTALLATION |
| R-5 | ALLOWABLE TRENCH WIDTHS | R-23 | LARGE METER AND VAULT INSTALLATION NOTES |
| R-6 | MAXIMUM PERMISSIBLE JOINT DEFLECTIONS | R-24 | NPRL AIR AND VACUME RELEASE VALVE ASSEMBLY 1" OR 2" |
| R-7 | MECHANICAL JOINT BOLT USAGE CHART | R-25 | BRASS FITTINGS FOR NPRL METER INSTALLATION |
| R-8 | TAPPING SLEEVE AND VALVE INSTALLATION DETAIL | R-26 | PIPE JOINING USE OF SOLID SLEEVE |
| R-9 | TAPPING SLEEVE LENGTH | R-27 | NPRL TERMINATION CUL-DE-SAC |
| R-10 | STUB OUT DETAIL | R-28 | METER LOCATIONS 3/4" TO 2" |
| R-11 | ROUND CONNECTION DETAIL | R-29 | VALVE BOX |
| R-12 | STANDARD NPRL THRUST BLOCKS | R-30 | PAVEMENT REPAIRS TYPES A, B, AND C |
| R-13 | THRUST RESTRAINT CONCRETE COLLAR | R-31 | DRIVEWAY DUT REPAIRS CONCRETE, GRAVEL AND ASPHALT |
| R-14 | THRUST RESTRAINT TIE ROD CHART | R-32 | SIDEWALK, CURB AND GUTTER REPAIRS |
| R-15 | THRUST RESTRAINT TIE ROD INSTALLATION | R-33 | EROSION CONTROL CHECK DAMS |
| R-16 | THRUST RESTRAINT STRAP AND ROD DETAILS | R-34 | LINE/VALVE MARKER LABEL |
| R-17 | CASING / PIPE SUPPORT INSTALLATION | R-35 | CUSTOMER SIGNS |
| R-18 | 5/8" METER INSTALLATION | R-36 | POLYETHYLENE ENCASEMENT INSTALLATION |
| | | R-37 | CUL-DE-SAC REUSE FLUSH POINT |
| | | R-38 | IN LINE REUSE FLUSH POINT |

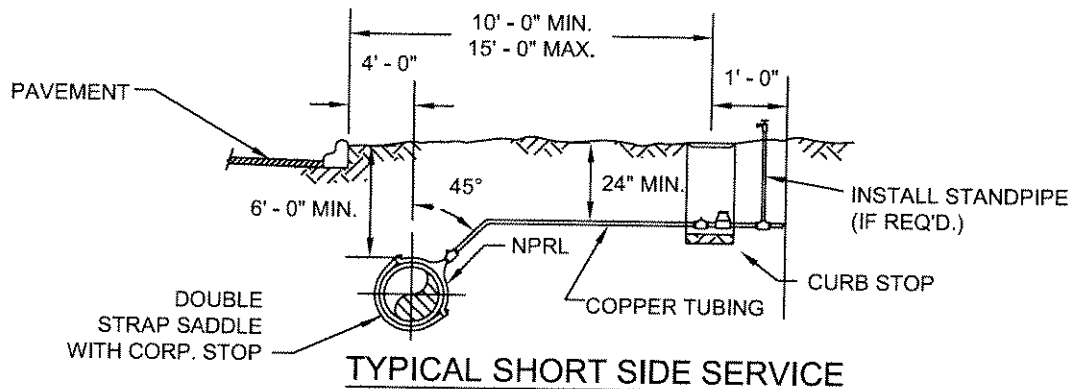
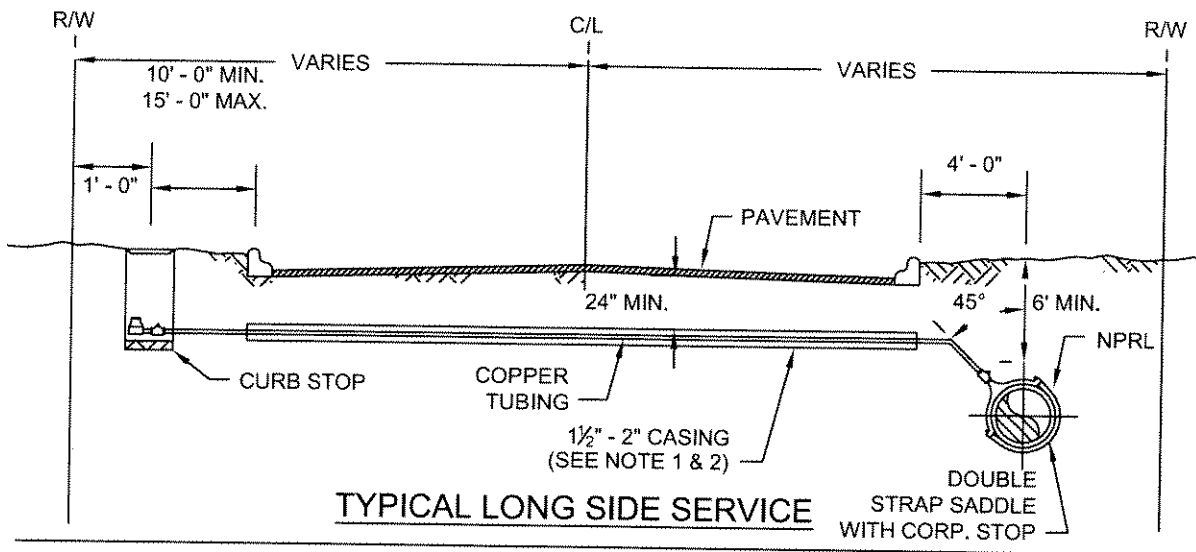


FULTON COUNTY
DEPARTMENT OF PUBLIC WORKS
WATER SERVICES

| DATE | REVISIONS | BY |
|------|-----------|----|
| | | |
| | | |
| | | |
| | | |

| | | | |
|---|--|---------------------|--------|
|  | | FILE NO. R-1 | |
| | | DSN | APPR'D |
| | | DWN | DATE |
| | | CK'D | |

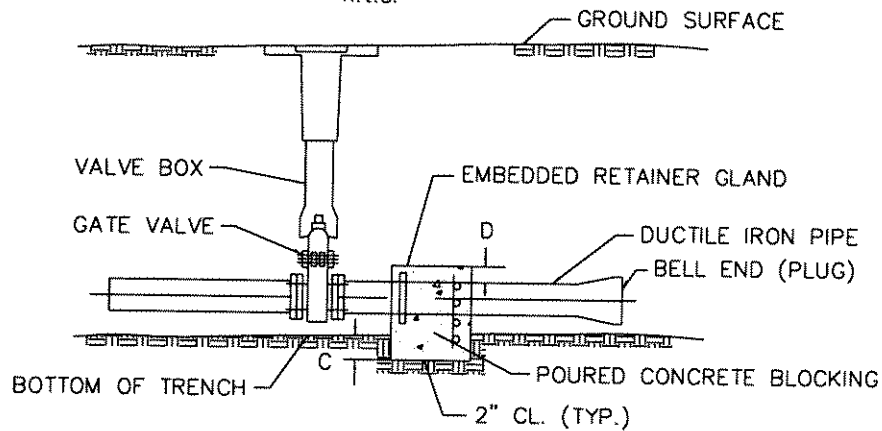
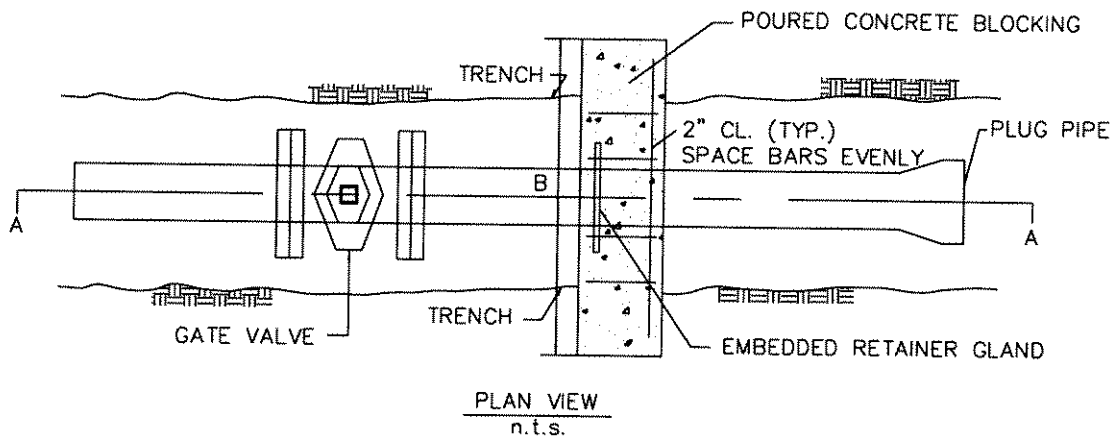
UTILITY LOCATION DETAIL



NOTES

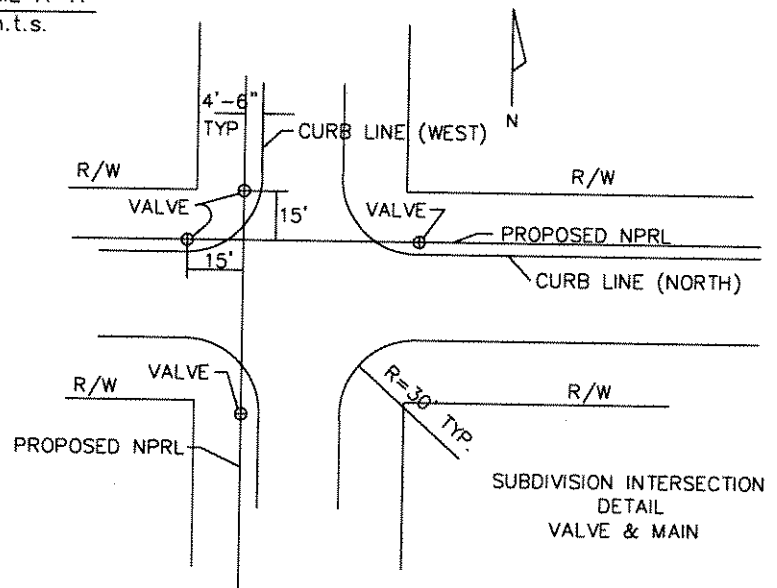
1. IN THE EVENT CASING IS NOT PRESENT ON LONG SIDE LOT, BORING SHALL BE PERMITTED. WHEN CASING DOES EXIST - 1" OR 3/4" PIPE SHALL BE INSERTED THROUGH CASING TO COMPLETE THE INSTALLATION FROM THE MAIN TO THE METER.
2. APPROVAL MUST BE OBTAINED BY FULTON COUNTY DOT PRIOR TO ROAD CUT, DPU DOES NOT HAVE THE AUTHORITY TO APPROVE ROAD CUTS. NO ROAD CUT SHALL BE PERMITTED UNTIL 3 ATTEMPTS HAVE BEEN MADE AT BORING OR LOCATING CASING.
3. 24" COVER (MIN.) FROM SURFACE TO TOP OF SERVICE PIPE APPLIES TO COUNTY MAINTAINED ROADS FOR STATE ROADS SAID MINIMUM CLEARANCE SHALL BE 48".
4. ALL CUTS IN PAVEMENT SHALL BE REPAIRED IN ACCORDANCE WITH EITHER GA. D.O.T. OR FULTON CO. STANDARDS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DITCH COMPACTION, CUT BACK OF DITCH SIDES AND PAVING OF THE REQUIRED CONCRETE SUB-BASE AND PLATTING THE DITCH TO ALLOW TRAFFIC FLOW WHILE CONCRETE IS SETTING UP. STEEL TRAFFIC PLATES WILL COVER POURED CONCRETE FOR A MINIMUM OF 24 HOURS.
5. METERS ARE TO BE SET DIRECTLY OPPOSITE TAP ON MAIN. THE METER SHALL NOT BE OFFSET Laterally FROM TAP ON WATER MAIN.

| | | |
|---|----------------------------|--|
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | | |
| <h3 style="margin: 0;">3/4" - 1" METER SETTINGS SHORT AND LONG SIDES</h3> | | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ | |
| FILE NO. R-2 | | |




BLOCKING DETAILS

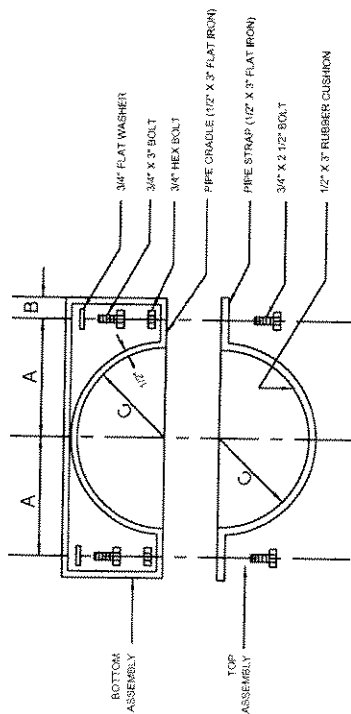
| PIPE SIZE | A (IN.) | B (IN.) | C (IN.) | D (IN.) | REQD. STEEL (EACH WAY) |
|-----------|---------|---------|---------|---------|------------------------|
| 8" | 10 | 32 | 12 | 8 | 4 - #4 |
| 10" | 12 | 40 | 15 | 10 | 4 - #4 |
| 12" | 14 | 54 | 24 | 12 | 4 - #4 |
| 16" | 18 | 60 | 30 | 16 | 6 - #4 |



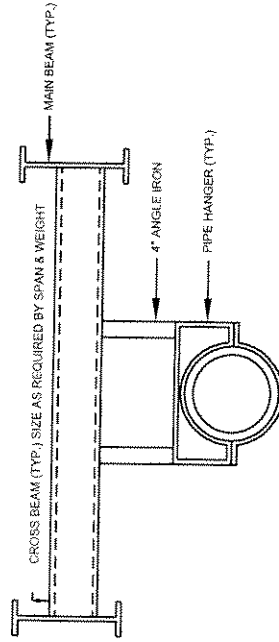
NOTES:

1. ANCHOR BLOCKING DETAIL TO BE USED AT THE END OF ANY COUNTY ROAD WHERE NPRL MAY BE EXTENDED AT A FUTURE DATE.
2. ALL CONCRETE TO BE 3000psi
3. ALL STEEL TO BE 60,000psi

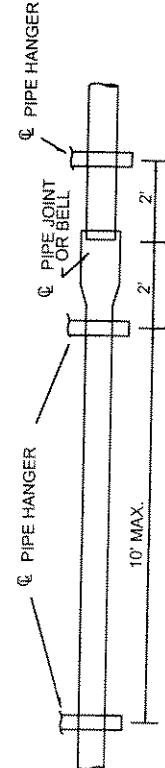
| | | | | |
|--------------------------------------|--|--|--|--|
| DATE REVISIONS BY | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  FULTON COUNTY |
| | | MAIN EXTENSION BLOCKING DETAILS SUBDIVISION INTERSECTION DETAIL VALVE AND MAIN | | |
| DSN _____ DWN _____ CK'D _____ | | APPR'D _____ DATE _____ | | FILE NO. R-3 |



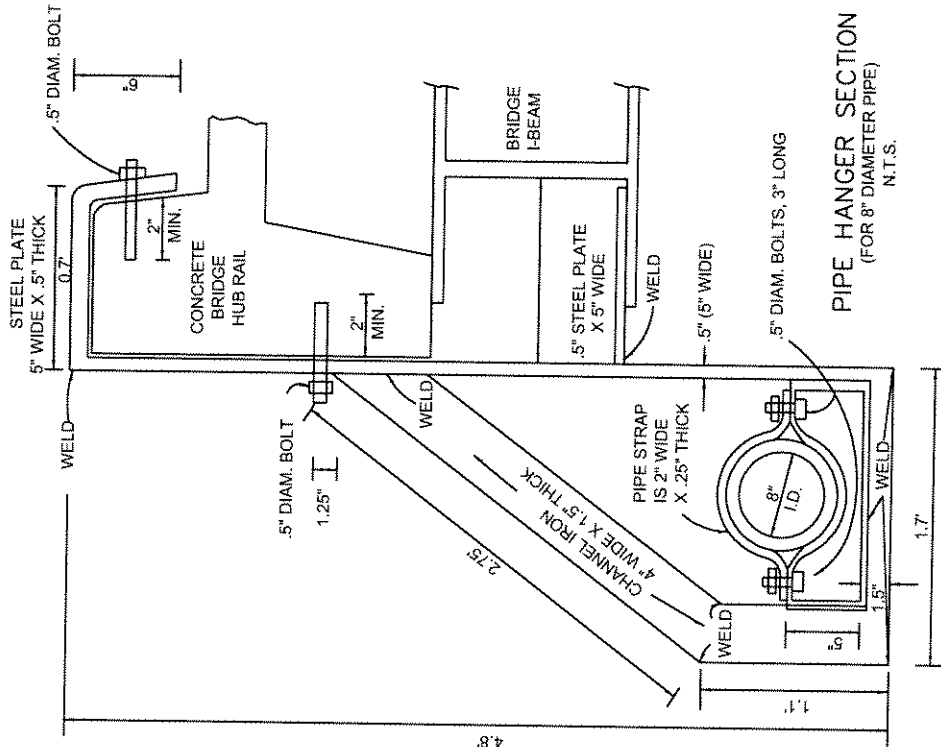
| DIMENSIONS IN INCHES FOR PIPE HANGERS | | | |
|---------------------------------------|-------|------|------------|
| PIPE SIZE | A | B | C (RADIUS) |
| 8 | 8.53 | 2.00 | 4.53 |
| 12 | 8.60 | 2.00 | 6.60 |
| 16 | 10.70 | 2.00 | 8.70 |



TYPICAL WATER MAIN SUPPORT DETAILS



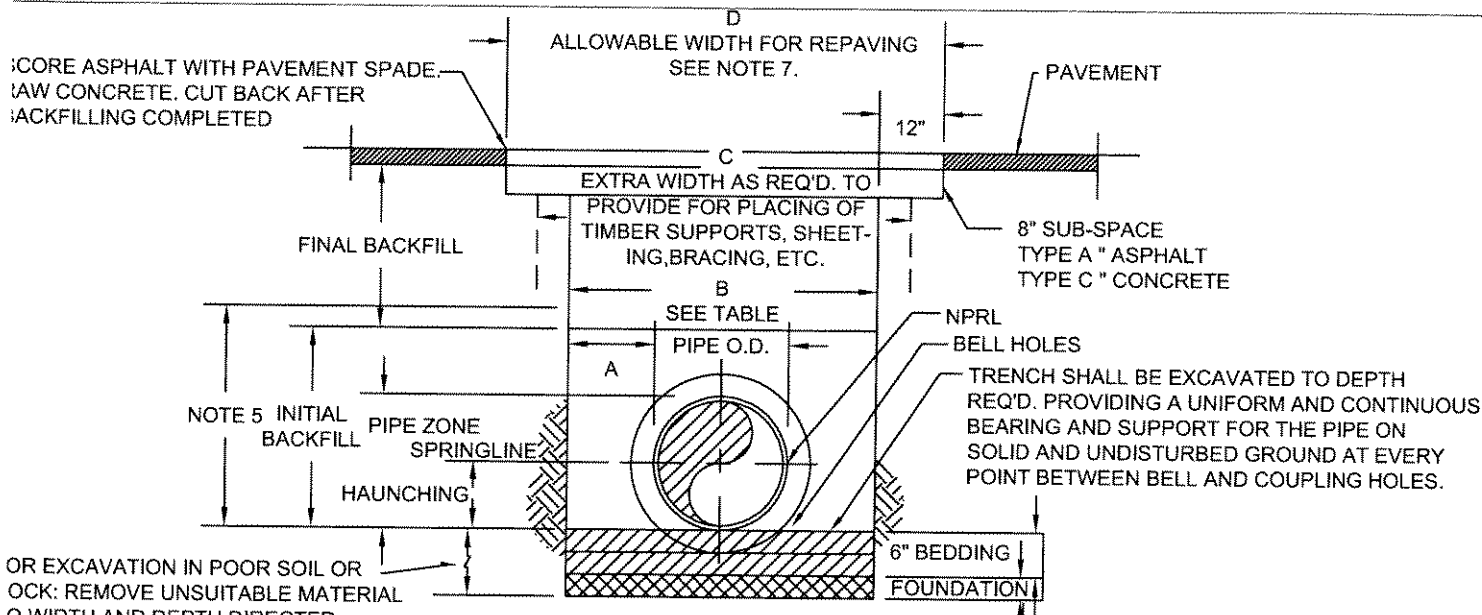
PLAN FOR PIPE HANGER SPACING
N.T.S.



PIPE HANGER SECTION
(FOR 8" DIAMETER PIPE)
N.T.S.

- NOTES:
1. PROVIDE TWO SUPPORTS PER JOINT, TWO FEET FROM JOINT
 2. ENGINEER SHALL DESIGN SUPPORT DETAILS FOR NPRL LARGER THAN 8" IN DIAMETER
 3. STEEL SHALL BE A-36
 4. WELDING SHALL BE E-70XX
 5. ALTERNATE DESIGN MAY BE SUBMITTED BY THE ENGINEER FOR APPROVAL BY FULTON COUNTY DEPARTMENT OF PUBLIC WORKS
 6. RESTRAINED JOINTS EQUAL TO GRIP TIGHT OR APPROVED EQUAL SHALL BE USED TWO JOINTS EITHER SIDE OF SUSPENDED PIPE
 7. PRIMER SHALL BE NO. 1-B ORANGE PRIMER AND CONFORM TO GEORGIA D.O.T. ARTICLE 870.02. PRIMER SHALL BE APPLIED TO A MINIMUM THICKNESS OF 4 MILS
 8. PAINT SHALL BE NO. 3-A GREEN, BRUSHING, ROLLER AIRLESS TYPE AND CONFORM TO GEORGIA D.O.T. ARTICLE 870.02. PAINT SHALL BE APPLIED TO A MINIMUM THICKNESS OF 10 MILS
 9. TWO BOTTOM ASSEMBLIES USED TOGETHER MAY BE REQUIRED IN SOME INSTALLATIONS

| | | | | |
|---|--|-----------|--------|------------------------|
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | | | | FILE NO. R-4 |
| TYPICAL PIPE HANGER AND SUPPORT DETAILS | | DSN | APPR'D | |
| | | DWN | DATE | |
| | | BY | | |
| | | REVISIONS | | |
| | | DATE | | |



OR EXCAVATION IN POOR SOIL OR
OCK: REMOVE UNSUITABLE MATERIAL
O WIDTH AND DEPTH DIRECTED.
EFORE PIPE IS LAID, THE SUBGRADE
HALL BE BACKFILLED WITH AN
PPOVED MATERIAL IN 3" LAYERS.
ACH LAYER SHALL BE THOROUGHLY
AMPED TO 95 % COMPACTION.

ALLOWABLE TRENCH WIDTHS

| PIPE SIZE (NOM) | A SIDE CLEARANCE INCH | | B DITCH WIDTH INCH | | | | C SHORING WIDTH (ADDITIONAL-INCH) | D CUT REPAIR WIDTH FEET | | | |
|-----------------------|-----------------------------|------|--------------------------|----|------|----|---|-------------------------------|------|------|------|
| | SOIL | ROCK | SOIL | | ROCK | | | SOIL | | ROCK | |
| | | | MJ | SJ | MJ | SJ | | MJ | SJ | MJ | SJ |
| 3/4"-2" | 2 | 6 | NA | 8 | NA | 14 | AS APPROVED | NA | 3.00 | NA | 3.17 |
| 4" | 9 | 12 | 25 | 23 | 27 | 23 | AS APPROVED | 4.08 | 3.92 | 4.25 | 4.06 |
| 6" | 9 | 12 | 28 | 28 | 30 | 30 | AS APPROVED | 4.33 | 4.33 | 4.50 | 4.50 |
| 8" | 9 | 12 | 32 | 30 | 34 | 32 | AS APPROVED | 4.67 | 4.50 | 4.63 | 4.67 |
| 10" | 9 | 12 | 34 | 32 | 36 | 34 | AS APPROVED | 4.83 | 4.67 | 5.00 | 4.83 |
| 12" | 9 | 12 | 36 | 34 | 38 | 36 | AS APPROVED | 5.00 | 4.83 | 5.17 | 5.00 |
| 14" | 9 | 14 | 39 | 36 | 41 | 38 | AS APPROVED | 5.23 | 5.00 | 5.42 | 5.17 |
| 16" | 9 | 14 | 42 | 38 | 44 | 40 | AS APPROVED | 5.50 | 5.17 | 5.57 | 5.33 |
| 20" | 9 | 14 | 45 | 44 | 47 | 46 | AS APPROVED | 5.75 | 5.67 | 5.92 | 5.63 |
| 24" | 9 | 14 | 50 | 48 | 52 | 50 | AS APPROVED | 6.17 | 6.00 | 6.33 | 6.17 |
| 30" | 9 | 18 | 58 | 54 | 60 | 56 | AS APPROVED | 6.83 | 6.50 | 7.00 | 6.67 |
| 36" | 9 | 18 | 64 | 61 | 66 | 63 | AS APPROVED | 7.33 | 7.08 | 7.50 | 7.25 |
| 42" | 9 | 18 | 72 | 64 | 74 | 66 | AS APPROVED | 8.00 | 7.33 | 8.17 | 7.50 |
| 48" | 9 | 18 | 78 | 73 | 80 | 76 | AS APPROVED | 8.50 | 8.08 | 9.34 | 8.25 |

NOTES:

1. COMPACTION: BACKFILLS SHALL BE BUILT-UP IN LAYERS AND EACH LAYER SHALL BE THOROUGHLY COMPACTED BEFORE BEGINNING ANOTHER LAYER. LAYERS SHALL BE NO MORE THAN 6" IN DEPTH. PUDDLING WILL NOT BE PERMITTED, NOR WILL FROZEN OR WET MATERIAL BE PLACED IN TRENCHES.
2. COMPACTION STANDARDS: ALL BACKFILL MATERIALS USED SHALL CONTAIN A SUFFICIENT AMOUNT OF MOISTURE FOR PROPER COMPACTION AND THESE MATERIALS SHALL BE COMPACTED AT NOT LESS THAN 95% OF THEIR OPTIMUM COMPACTION FOR ANY SPECIFIC SOIL CLASSIFICATION AS DETERMINED BY THE MODIFIED PROCTOR TEST ASTM. D698
3. COMPACTION TESTS: COMPACTION TESTS MAY BE REQUIRED IN EXISTING OR PROPOSED STREETS, SIDEWALKS, DRIVES AND OTHER EXISTING OR PROPOSED PAVED AREAS AT VARYING DEPTHS AND AT INTERVALS AS DETERMINED BY THE ENGINEER WITH A MINIMUM OF ONE TEST PER JOB, AND A MAXIMUM OF ONE REQUIRED TEST FOR EACH 400' OR LESS OF NPRL CONSTRUCTION, UNLESS SOIL CONDITIONS OR CONSTRUCTION PRACTICES, IN THE OPINION OF THE ENGINEER, WARRANT THE NEED FOR ADDITIONAL TESTS.
4. NO BOULDERS OR LOOSE ROCKS PERMITTED IN THE BACKFILL AT THE BOTTOM OF PIPE TRENCH TO 2'-0" ABOVE PIPE.
5. ALL DESIGNS BASED ON FULLY COMPACTED BACKFILL AND UNIFORMLY SUPPORTED PIPE.
7. FOR PAVEMENT CUT REPAIRS SEE DRWG. R-30, R-31, AND R-32


| | | | |
|--------------------------------------|--|---|--|
| BY REVISIONS DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | ALLOWABLE TRENCH WIDTHS | |
| DSN _____ DWN _____ CK'D _____ | | APPR'D _____ DATE _____ | |
| | | FILE NO. R-5 | |

MAXIMUM PERMISSIBLE DEFLECTIONS

| SIZE (NOM) | PUSH-ON JOINT (18 FT. JOINTS) | | MECHANICAL JOINT (18 FT. JOINTS) | |
|------------|----------------------------------|-------------|-------------------------------------|-------------|
| | DEGREE | MAX. OFFSET | DEGREE | MAX. OFFSET |
| 3" | 4.0 | 15" | 4.5 | 17" |
| 4" | 4.0 | 15" | 4.5 | 17" |
| 6" | 4.0 | 15" | 4.5 | 17" |
| 8" | 4.0 | 15" | 4.5 | 17" |
| 10" | 4.0 | 15" | 4.5 | 17" |
| 12" | 4.0 | 15" | 4.5 | 17" |
| 14" | 2.5 | 9.4" | 3.0 | 11" |
| 16" | 2.0 | 7.5" | 3.0 | 11" |
| 20" | 2.0 | 7.5" | 2.0 | 7.5" |
| 24" | 2.0 | 7.5" | 2.0 | 7.5" |
| 30" | 1.5 | 5.5" | 2.0 | 7.5" |
| 36" | 1.5 | 5.5" | 2.0 | 7.5" |
| 42" | 1.5 | 5.5" | 1.5 | 5.5" |
| 48" | 1.5 | 5.5" | 1.5 | 5.5" |

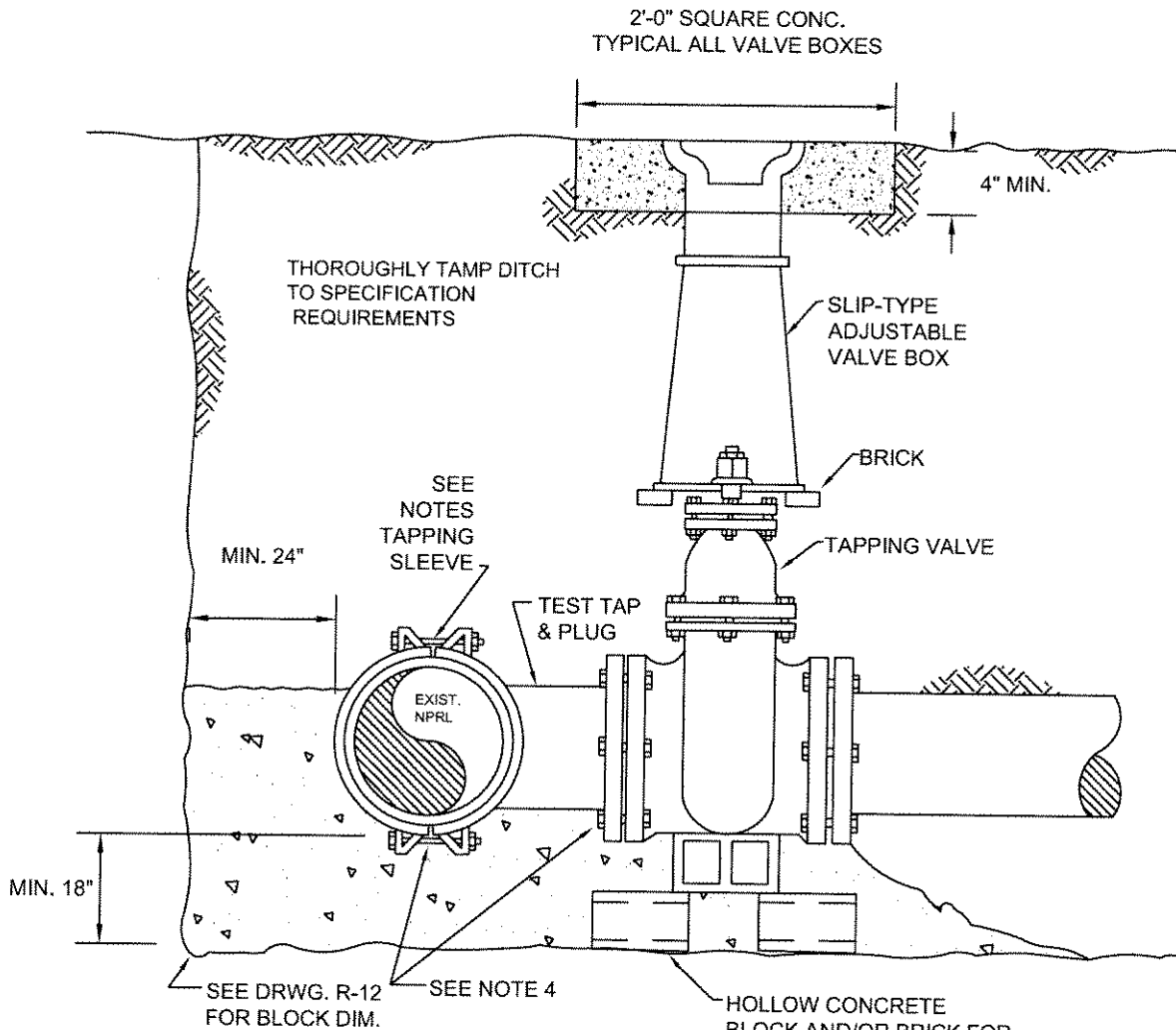
NOTES:

1. WHEN A PIPE IS DEFLECTED, THE PIPE SHALL FIRST BE ASSEMBLED IN A STRAIGHT LINE, BOTH HORIZONTALLY AND VERTICALLY BEFORE THE DEFLECTION IS MADE.
2. FOR MECHANICAL JOINT PIPE, THE BOLTS SHALL BE PARTIALLY TIGHTENED BEFORE THE LENGTH OF PIPE IS DEFLECTED. ANY SUPPORTED PIPE, SHALL BE SO SUPPORTED THAT THERE IS ZERO DEFLECTION EXCEPT WHERE EITHER A HORIZONTAL OR VERTICAL CURVE ON A BRIDGE OR OTHER STRUCTURE IS INVOLVED.
3. THRUST RESTRAINTS MAY BE REQUIRED ON THE DEFLECTED JOINTS.

| | | |
|---|----------------------------|---|
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| <h2 style="margin: 0;">MAXIMUM PERMISSIBLE JOINT DEFLECTIONS</h2> | | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ | |
| FILE NO. <h1 style="margin: 0;">R-6</h1> | | |


| NOM. PIPE DIA. | BELL DEPTH | BOLTS | | | | JOINT ACCESSORY WEIGHT-Lbs. |
|----------------------|---------------|----------|--------|---------------------|-------------------------|--------------------------------|
| | | DIAMETER | LENGTH | NUMBER PER JOINT | REC. TORQUE Ft.-Lbs. | |
| 4 | 2 1/2" | 3/4" | 3 1/2" | 4 | 75-90 | 10 |
| 6 | 2 1/2" | 3/4" | 3 1/2" | 6 | 75-90 | 16 |
| 8 | 2 1/2" | 3/4" | 4" | 6 | 75-90 | 25 |
| 10 | 2 1/2" | 3/4" | 4" | 8 | 75-90 | 30 |
| 12 | 2 1/2" | 3/4" | 4" | 8 | 75-90 | 40 |
| 14 | 3 1/2" | 3/4" | 4 1/2" | 10 | 75-90 | 45 |
| 16 | 3 1/2" | 3/4" | 4 1/2" | 12 | 75-90 | 55 |
| 18 | 3 1/2" | 3/4" | 4 1/2" | 12 | 75-90 | 65 |
| 20 | 3 1/2" | 3/4" | 4 1/2" | 14 | 75-90 | 85 |
| 24 | 3 1/2" | 3/4" | 5" | 16 | 75-90 | 105 |
| 30 | 4" | 1" | 6" | 20 | 100-120 | 220 |
| 36 | 4" | 1" | 6" | 24 | 100-120 | 285 |
| 42 | 4" | 1 1/4" | 6" | 28 | 120-150 | 400 |
| 48 | 4" | 1 1/4" | 6" | 32 | 120-150 | 475 |

| | | | |
|---|--|---|----------------------------|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | MECHANICAL JOINT BOLT USAGE CHART | |
| | | | |
| | | DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ |



NOTES:

1. TEMPORARILY SUPPORT TAPPING SADDLE AND VALVE AND APPLY STANDARD HYDROSTATIC TEST.
2. IF NO LEAKS, POUR INDICATED PERMENANT CONCRETE BLOCK AND SUPPORT PAD.
3. MAKE TAP, LINE EXTENSION AND BACKFILL.
4. COVER GLANDS AND BOLTS WITH HEAVY POLYETHELENE SHEETING TO KEEP CONCRETE FROM BONDING. TYPICAL WHENEVER BOLTS OR GLANDS MAY BE "WRAPPED-UP" IN CONCRETE.
5. COAT TAPPING SLEEVE AND BOLTS WITH AN APPROVED BITUMASTIC COATING BEFORE POURING CONCRETE. TYPICAL FOR ALL STEEL INCLUDING RODS, COUPLINGS, STRAPS, AND OTHER BURIED STEEL. SEE NOTE 3, DRWG. R-15 FOR COATING.

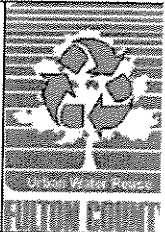
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|---|----------------------------|---|--|---|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  FULTON COUNTY Urban Water Reuse |
| | | TAPPING SLEEVE AND VALVE INSTALLATION DETAIL | | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ | FILE NO. R-8 | | |

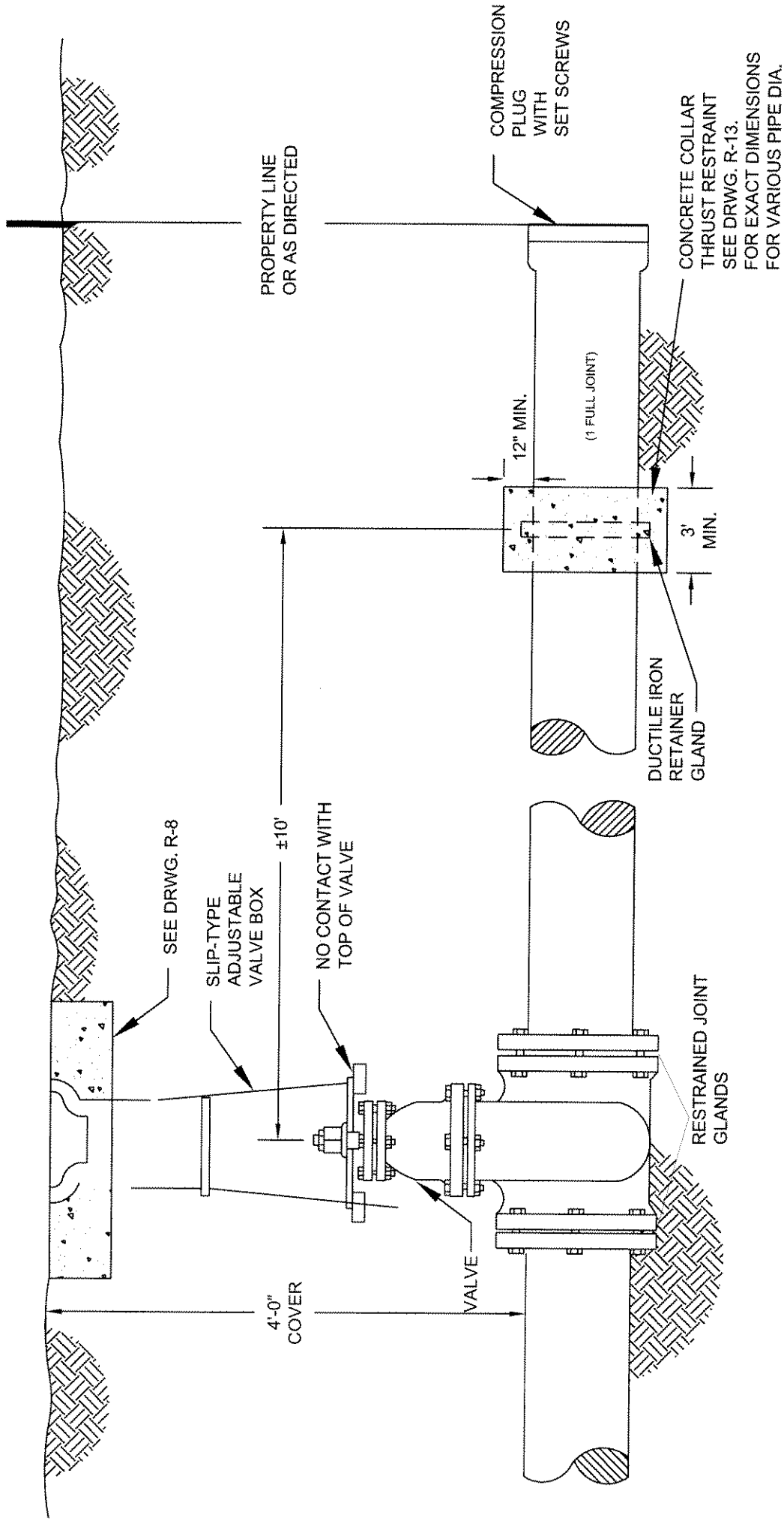
MAXIMUM TAPPING SLEEVE LENGTH

| MAIN & TAP (IN. NOMINAL) | LENGTH (ALONG RUN) |
|-----------------------------|-----------------------|
| 6x6, 6x3, 6x4, 6x2 | 18" |
| 8x2, 8x3, 8x4, 8x6 | 19" |
| 8x8 | 21" |
| 10x2, 10x3, 10x4, 10x6 | 19" |
| 10x8, 10x10 | 23" |
| 12x2, 12x3, 12x5, 12x6 | 19" |
| 12x8 | 21" |
| 12x10, 12x12 | 25" |

NOTES:

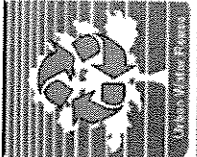
1. ALL TAPPING SLEEVES AND VALVES SHALL BE HYDROSTATICALLY TESTED BEFORE TAP IS MADE. SEE DRWG. R-8 FOR TYPICAL INSTALLATION AND NOTES.
2. WORKMEN INSTALLING TAPPING SLEEVE AND VALVE SHALL FOLLOW MANUFACTURER'S INSTALLATION PROCEDURES AND THE REQUIRMENTS OF FULTON COUNTY DEPARTMENT OF PUBLIC WORKS

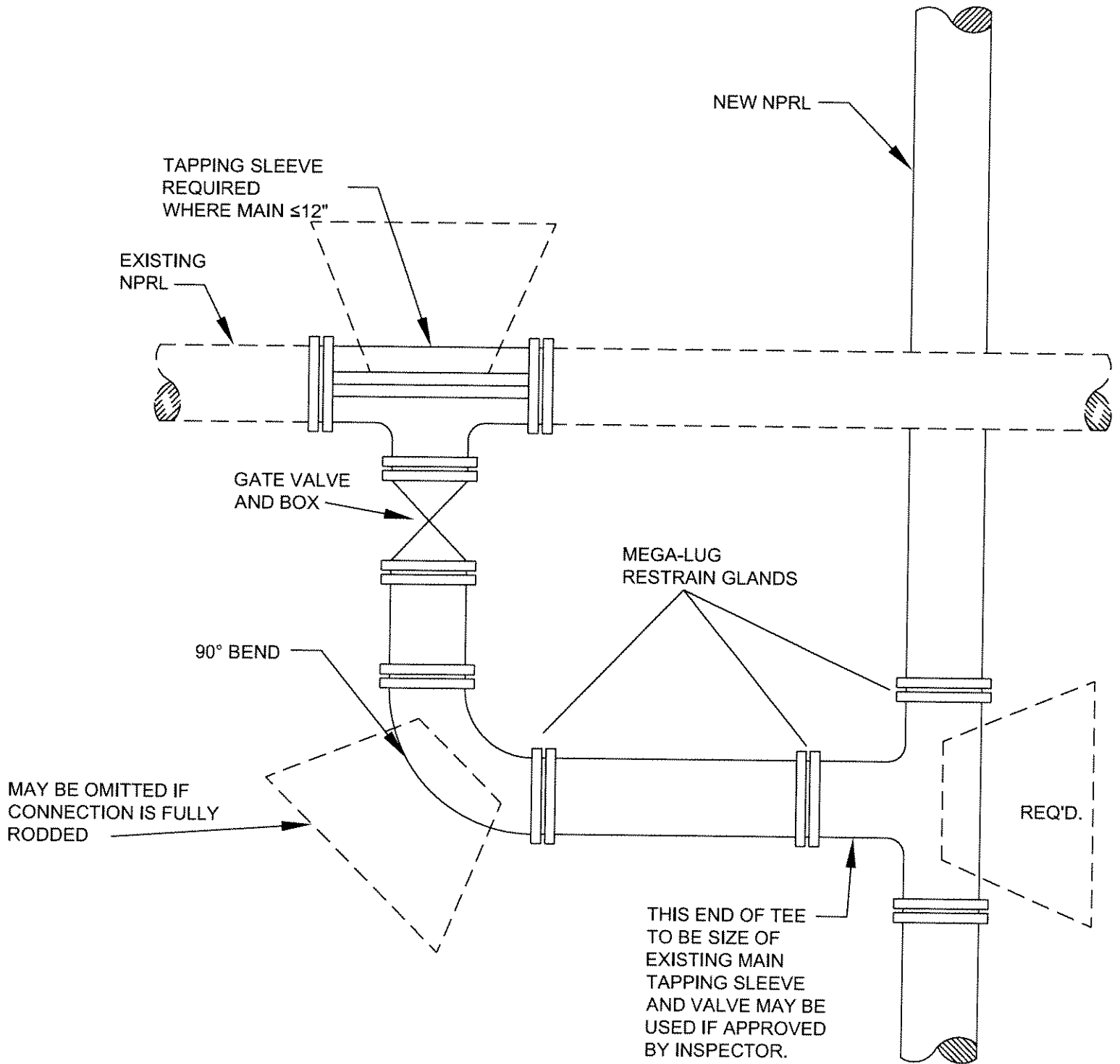
| | | | | | | |
|------|-------|-----------|-------|---|--|---|
| BY | | REVISIONS | DATE | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| | | | | TAPPING SLEEVE LENGTH | | |
| DSN | _____ | APPR'D | _____ | FILE NO. | | R-9 |
| DWN | _____ | DATE | _____ | | | |
| CK'D | _____ | | | | | |



NOTES:

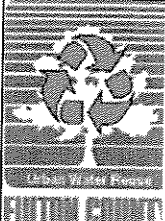
1. STUB OUT MUST BE HYDROSTATICALLY TESTED WITH REST OF NPRL
2. IN LIEU OF SLIP-JOINT AND COMPRESSION PLUG, AN M.J. JOINT MAY BE USED WITH AN M.J. PLUG.

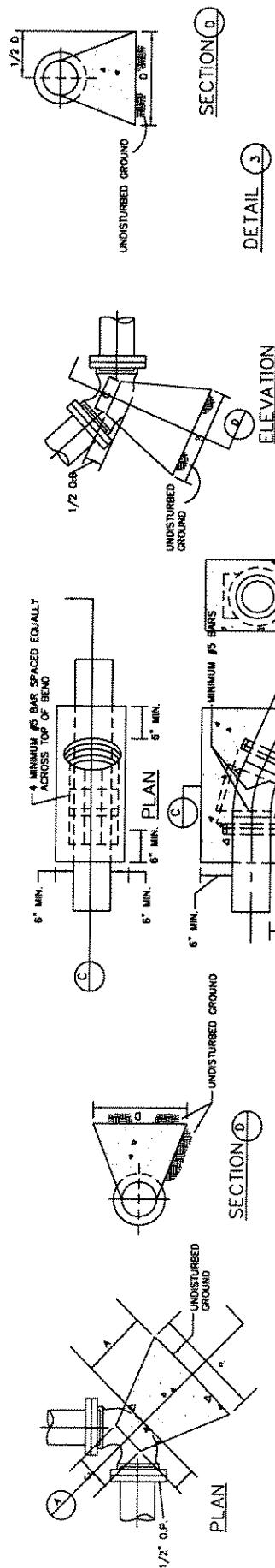
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|---|--|--|--------|-------------------------|
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  | | FILE NO. R-10 |
| STUB OUT DETAIL | | DSN | APPR'D | |
| | | DWN | DATE | |
| | | CK'D | | |
| DATE | | REVISIONS | | BY |
| | | | | |
| | | | | |
| | | | | |



NOTES:

1. GATE VALVES AND FITTINGS USED IN THIS CONNECTION TO BE SAME SIZE AS EXISTING NPRL WHERE EXISTING NPRL IS 12" OR SMALLER.

| | | | | |
|---|----------------------------|---|--|---|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| | | ROUND CONNECTION DETAIL | | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ | FILE NO. R-11 | | |



DIMENSIONS FOR CONCRETE BLOCKING
HORIZONTAL THRUST

| BEND | SIZE | A (FT) | B (FT) | C (FT) | D (FT) | VOLUME (CU. YD.) |
|---------------------------|------|--------|--------|--------|--------|------------------|
| 11.25 | 6" | 1.0 | 1.0 | 7" | 1.0 | 0.03 |
| | 8" | 1.0 | 1.25 | 7" | 1.0 | 0.04 |
| | 12" | 1.0 | 2.0 | 11" | 2.0 | 0.1 |
| | 16" | 2.0 | 3.0 | 15" | 2.0 | 0.3 |
| 22.5 | 6" | 1.0 | 1.5 | 7" | 1.0 | 0.04 |
| | 8" | 1.0 | 2.0 | 7" | 2.0 | 0.1 |
| | 12" | 2.0 | 3.0 | 11" | 2.0 | 0.3 |
| | 16" | 2.0 | 4.0 | 15" | 3.0 | 0.6 |
| 45° | 6" | 1.5 | 2.0 | 7" | 1.5 | 0.11 |
| | 8" | 2.0 | 3.0 | 7" | 2.0 | 0.3 |
| | 12" | 2.0 | 4.0 | 11" | 3.0 | 0.7 |
| | 16" | 3.0 | 5.0 | 15" | 4.0 | 1.4 |
| 90° | 6" | 1.75 | 2.5 | 7" | 2.0 | 0.2 |
| | 8" | 2.0 | 3.0 | 7" | 3.0 | 0.4 |
| | 12" | 4.0 | 6.0 | 11" | 4.0 | 2.1 |
| | 16" | 5.0 | 8.0 | 15" | 5.0 | 5.3 |
| TEE BRANCHES PLUGS & CAPS | 6" | 1.5 | 2.0 | 7" | 1.75 | 0.13 |
| | 8" | 2.0 | 3.0 | 7" | 2.0 | 0.3 |
| | 12" | 2.0 | 4.0 | 11" | 4.0 | 2.1 |
| | 16" | 4.0 | 6.0 | 15" | 5.0 | 5.3 |

DIMENSIONS FOR CONCRETE BLOCKING
UPWARD THRUST

| BEND | SIZE | VOLUME (CU. YD.) | *A* NO. OF VERT. BARS REQ'D. |
|---------|------|------------------|------------------------------|
| 11 1/4" | 6" | 0.3 | 2 |
| | 8" | 0.6 | 2 |
| | 12" | 1.4 | 2 |
| | 16" | 2.4 | 3 |
| 22 1/2" | 6" | 0.7 | 2 |
| | 8" | 1.2 | 2 |
| | 12" | 2.7 | 2 |
| | 16" | 4.6 | 3 |
| 45° | 6" | 1.2 | 2 |
| | 8" | 2.2 | 2 |
| | 12" | 4.9 | 2 |
| | 16" | 8.8 | 3 |
| 90° | 6" | 1.8 | 2 |
| | 8" | 3.1 | 2 |
| | 12" | 7.0 | 3 |
| | 16" | 12.4 | 3 |

DIMENSIONS FOR CONCRETE BLOCKING
FOR BENDS - DOWNWARD THRUST

| BEND | SIZE | A (FT) | B (FT) | C (FT) | D (FT) | VOLUME (CU. YD.) |
|------|------|--------|--------|--------|--------|------------------|
| 114" | 6" | 1.0 | 1.0 | 7" | 1.0 | 0.05 |
| | 8" | 1.0 | 1.25 | 7" | 1.0 | 0.04 |
| | 12" | 1.0 | 2.0 | 11" | 2.0 | 0.1 |
| | 16" | 2.0 | 3.0 | 15" | 2.0 | 0.3 |
| 224" | 6" | 1.0 | 1.5 | 7" | 1.0 | 0.04 |
| | 8" | 1.0 | 2.0 | 7" | 2.0 | 0.1 |
| | 12" | 2.0 | 3.0 | 11" | 2.0 | 0.3 |
| | 16" | 2.0 | 4.0 | 15" | 3.0 | 0.6 |
| 45° | 6" | 1.5 | 2.0 | 7" | 1.5 | 0.11 |
| | 8" | 2.0 | 3.0 | 7" | 2.0 | 0.3 |
| | 12" | 2.0 | 4.0 | 11" | 3.0 | 0.7 |
| | 16" | 3.0 | 5.0 | 15" | 4.0 | 1.4 |
| 90° | 6" | 1.79 | 2.5 | 7" | 2.0 | 0.2 |
| | 8" | 2.0 | 3.0 | 7" | 3.0 | 0.4 |
| | 12" | 4.0 | 6.0 | 11" | 4.0 | 2.1 |
| | 16" | 5.0 | 8.0 | 15" | 5.0 | 5.3 |

GENERAL NOTES

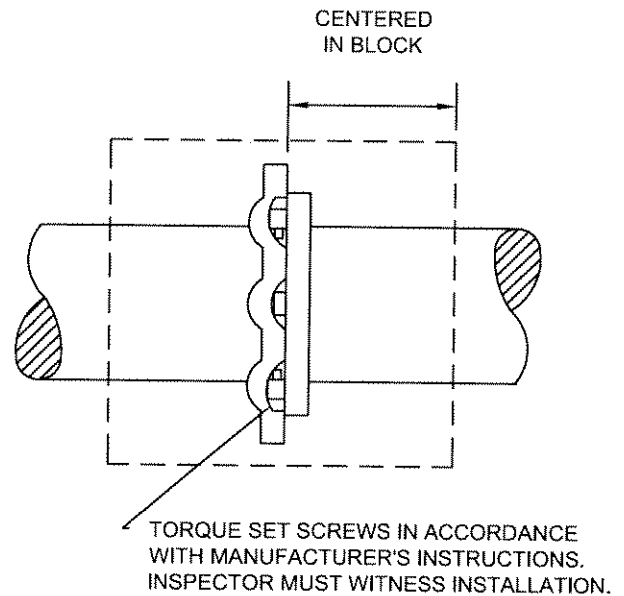
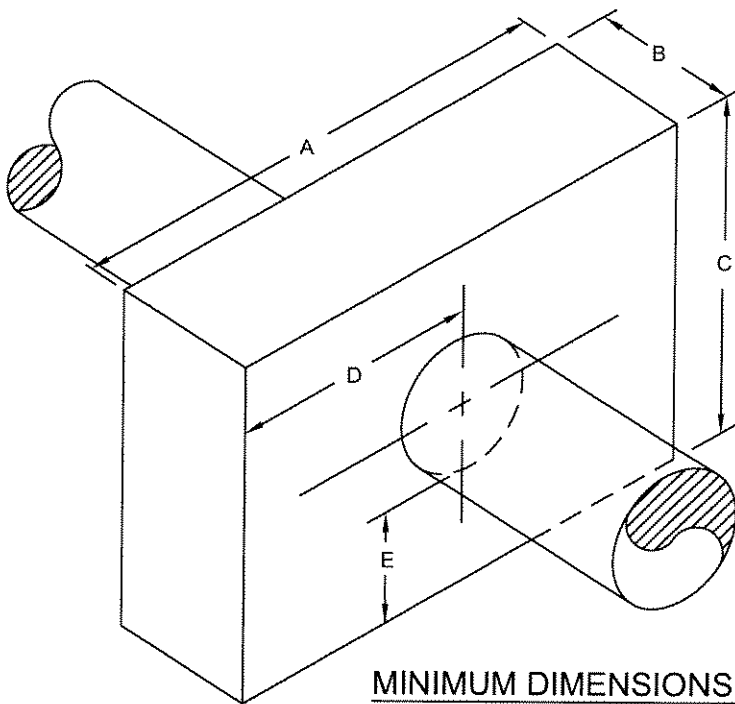
- THRUST BLOCK DIMENSIONS ARE BASED ON 2000 LB PER SQ. FOOT SOIL BEARING PRESSURE AND 250 POUNDS PER SQ. IN. TEST PRESSURE. ACTUAL DIAMETER OF DUCTILE IRON PIPE CLAS 52 USED IN STANDARD.
- SOIL CONDITIONS SHALL BE VERIFIED BY THE ENGINEER BEFORE THRUST BLOCK IS CONSTRUCTED WHERE SOIL BEARING PRESSURE IS LESS THAN 2000 LB/FT. THRUST BLOCK BEARING AREA SHALL BE INCREASED ACCORDINGLY.
- ALL CONCRETE SHALL BE CLASS A. 4000 PSI.

FULTON COUNTY
DEPARTMENT OF PUBLIC WORKS
WATER SERVICES

DATE _____ REVISIONS _____ BY _____

STANDARD NPRL
THRUST BLOCKS

DSN _____ APPR'D _____ FILE NO. **R-12**
DWN _____ DATE _____ CK'D _____



**MINIMUM DIMENSIONS IN FEET FOR CONCRETE
COLLAR ON DUCTILE IRON PIPE TO BE USED
WITH EMBEDDED DUCTILE IRON RETAINER GLAND**


| PIPE SIZE | A | B | C | D | E | VOLUME CU. YDS. | CONC. WT. | THRUST |
|-----------|-------|-------|-------|---------|-------|-----------------|-----------|--------|
| 4" | 3'-6" | 3'-0" | 1'-5" | 1'-6" | 1'-0" | 0.55 | 2230 | 3150 |
| 6" | 4'-0" | 3'-0" | 2'-7" | 2'-0" | 1'-0" | 1.15 | 4650 | 7070 |
| 8" | 4'-6" | 3'-0" | 3'-0" | 2'-3" | 1'-3" | 1.50 | 6075 | 12,570 |
| 10" | 5'-2" | 3'-0" | 3'-2" | 2'-7" | 1'-3" | 1.81 | 7330 | 19,635 |
| 12" | 5'-9" | 3'-0" | 3'-8" | 2'-10½" | 1'-8" | 2.34 | 9475 | 28,775 |
| 14" | 6'-6" | 3'-0" | 4'-0" | 3'-3" | 1'-9" | 2.89 | 11,700 | 38,490 |
| 16" | 6'-9" | 3'-0" | 4'-9" | 3'-3" | 2'-3" | 3.56 | 14,410 | 50,270 |

DESIGN DATA:

1. DIMENSION OF THRUST RESTRAINT IN FEET BASED ON 2000 POUNDS PER SQUARE FOOT SOIL BEARING PRESSURE AND 230 PER SQUARE INCH TEST PRESSURE. ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE, CLASS 31, USED AS STANDARD.
2. CONCRETE SHALL BE CLASS A, 3000 P.S.I.
3. UNDER ADVERSE CONSTRUCTION CONDITIONS, CONCRETE SHALL BE "HIGH EARLY" TYPE.

NOTES:

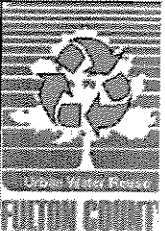
1. ALL NPRL GREATER THAN 13" I.D. SHALL BE INDIVIDUALLY CALCULATED BY THE FULTON COUNTY DEPARTMENT OF PUBLIC WORKS.
2. SOIL CONDITIONS SHALL BE VERIFIED BY THE ENGINEER BEFORE THRUST RESTRAINT DESIGN IS IMPLEMENTED.
3. PIPE MUST BE DUCTILE IRON.

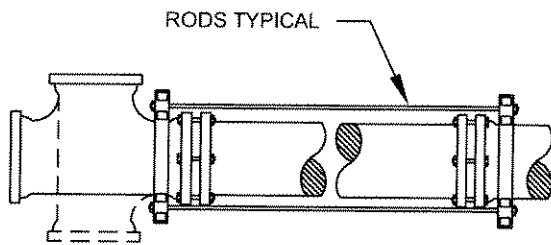
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|---|--------------|---|--|--|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  FULTON COUNTY |
| | | THRUST RESTRAINT CONCRETE COLLAR | | |
| DSN _____ | APPR'D _____ | FILE NO. | | R-13 |
| DWN _____ | DATE _____ | | | |
| CK'D _____ | | | | |

| | PIPE SIZE | ROD DIA. | NO. RODS | TOTAL THRUST (Lbs) |
|----------------------|-----------|----------|----------|--------------------|
| TEES, PLUGS & VALVES | 6" | 3/4" | 2/3 | 5,655 |
| | 8" | 3/4" | 2/3 | 10,055 |
| | 10" | 3/4" | 3 | 15,710 |
| | 12" | 3/4" | 4 | 22,620 |
| | 14" | 3/4" | 6 | 30,800 |
| | 16" | 3/4" | 4 | 40,215 |
| | 20" | 3/4" | 6 | 62,835 |
| | 24" | 3/4" | 8 | 90,480 |
| | 30" | 1" | 6 | 141,375 |
| | 36" | 1" | 6 | 203,595 |
| 11¼° B | 6" | 3/4" | 2 | 1,110 |
| | 8" | 3/4" | 2 | 1,970 |
| | 10" | 3/4" | 2 | 3,080 |
| | 12" | 3/4" | 2 | 4,435 |
| | 14" | 3/4" | 2 | 6,035 |
| | 16" | 3/4" | 2 | 7,885 |
| | 20" | 3/4" | 2 | 12,320 |
| | 24" | 3/4" | 2 | 17,740 |
| | 30" | 1" | 2 | 27,720 |
| | 36" | 1" | 2 | 39,910 |
| 22½° B | 6" | 3/4" | 2 | 2,210 |
| | 8" | 3/4" | 2 | 3,925 |
| | 10" | 3/4" | 2 | 6,130 |
| | 12" | 3/4" | 2 | 8,825 |
| | 14" | 3/4" | 2 | 12,015 |
| | 16" | 3/4" | 2 | 15,690 |
| | 20" | 3/4" | 2 | 24,515 |
| | 24" | 3/4" | 2 | 35,305 |
| | 30" | 1" | 2 | 55,160 |
| | 36" | 1" | 2 | 79,435 |
| 45° B | 6" | 3/4" | 2/3 | 4,430 |
| | 8" | 3/4" | 2/3 | 7,700 |
| | 10" | 3/4" | 2 | 12,025 |
| | 12" | 3/4" | 4 | 17,312 |
| | 14" | 3/4" | 4 | 23,565 |
| | 16" | 3/4" | 4 | 30,780 |
| | 20" | 3/4" | 4 | 48,090 |
| | 24" | 3/4" | 6 | 69,250 |
| | 30" | 1" | 4 | 108,205 |
| | 36" | 1" | 6 | 155,810 |
| 90° B | 6" | 3/4" | 2/3 | 8,000 |
| | 8" | 3/4" | 3 | 14,220 |
| | 10" | 3/4" | 4 | 22,214 |
| | 12" | 3/4" | 6 | 32,000 |
| | 14" | 3/4" | 6 | 43,540 |
| | 16" | 3/4" | 4 | 56,870 |
| | 20" | 3/4" | 6 | 88,860 |
| | 24" | 3/4" | 8 | 127,960 |
| | 30" | 1" | 6 | 199,930 |
| | 36" | 1" | 6 | 287,900 |

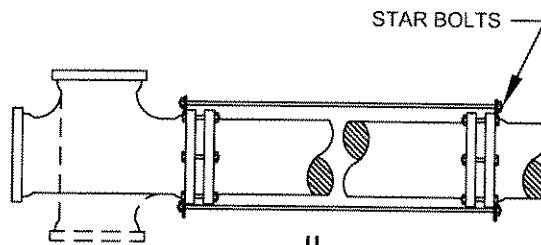
NOTES:

- ON PIPE SIZES 6"-14" ROD AND NUT WILL HAVE MIN. YIELD STRENGTH OF 50,000 PSI. ON PIPE SIZES 16"-24" ROD AND NUT WILL HAVE MIN. YIELD STRENGTH OF 100,000 PSI.
- RODS HAVE 6" OF THREAD ON EACH END.
- ALL METAL TO BE CLEANED AND COATED WITH AN APPROVED PROTECTIVE COATING FOLLOWING INSTALLATION AND PRIOR TO BACKFILLING. SEE NOTE 3, DRWG. R-15.

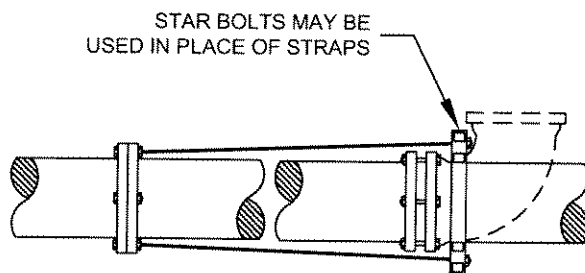
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|--------------------------------------|--|---|--|---|
| DATE REVISIONS BY | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  Upright Yield Point FULTON COUNTY |
| | | THRUST RESTRAINT TIE ROD CHART | | |
| DSN _____ DWN _____ CK'D _____ | | APPR'D _____ DATE _____ | | FILE NO. R-14 |



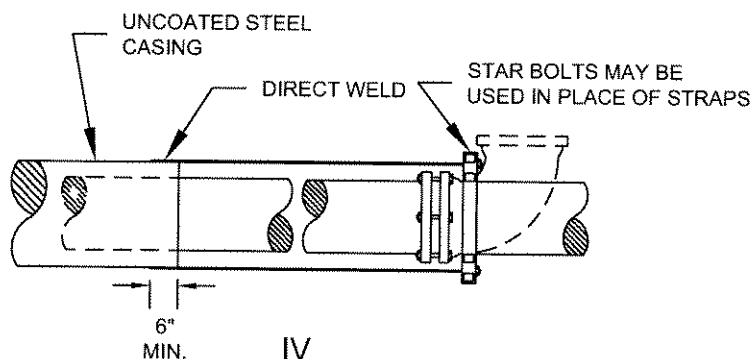
I
FITTING RESTRAINT
STRAPS & RODS



II
FITTING RESTRAINT
STAR BOLTS & RODS



III
FITTING RESTRAINT
FLANGE & MJ

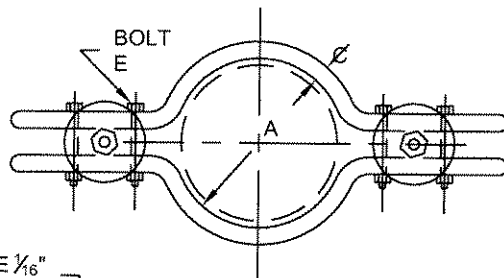


IV
FITTING RESTRAINT
DIRECT WELD TO STEEL CASING
(10" OR LESS MAINS ONLY)

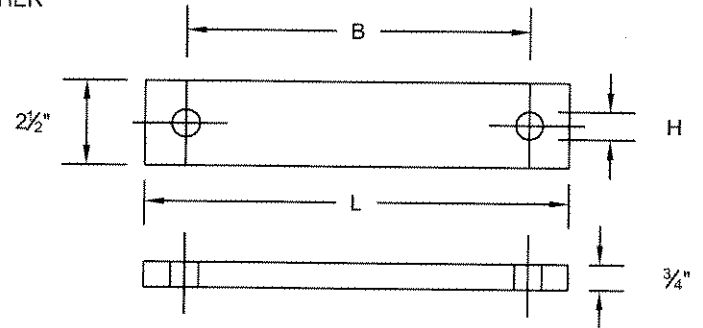
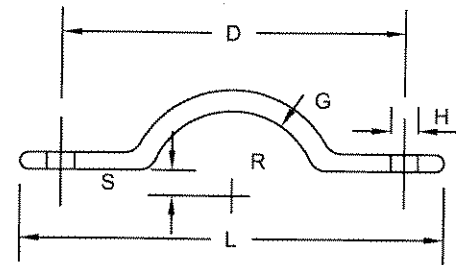
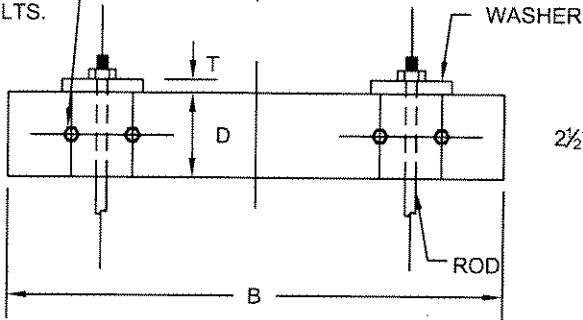
NOTES:

1. SEE DWRG. R-14 FOR NUMBER AND DIAMETER OF RODS REQUIRED.
2. NO FLANGES ARE TO BE BURIED.
3. AFTER INSTALLATION, TIE-RODS AND CLAMP ASSEMBLIES SHALL BE CLEANED AND THOROUGHLY COATED WITH ROYSTON LABORATORIES, INC. ROSKOTE PLASTIC NO. A 939 OR KOPPERS CO., INC. BITUMASTIC SUPERSERVICE BLACK OR APPROVED EQUIVALENT.
4. WHEN RESTRAINING FITTINGS TO STEEL CASING PIPE, THE TIE-RODS MUST BE DIRECT WELDED TO THE CASING - USE OF STAR BOLTS PROHIBITED. CASING MUST BE FULLY WELDED THROUGHOUT ITS LENGTH AND BE A MINIMUM OF 30' IN LENGTH. AREA TO BE WELDED MUST BE COMPLETELY BARE AND FREE OF ANY COATING MATERIAL.

| | | | |
|-------------------------|----------------|---|--|
| DATE REVISIONS BY | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | THRUST RESTRAINT TIE ROD INSTALLATION | |
| DSN DWN CK'D | APPR'D DATE | FILE NO. R-15 | |



BOLT HOLES SHALL BE $\frac{1}{16}$ " DIA. LARGER THAN BOLTS.

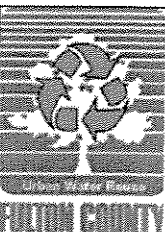


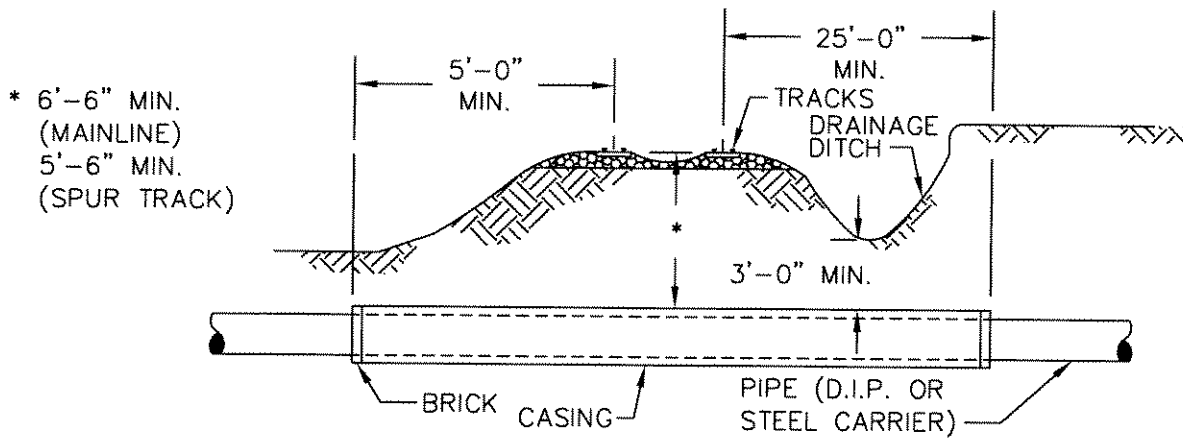
| STEEL SOCKET CLAMP DIMENSIONS (INCHES) | | | | | | | |
|--|--------|--------|-----|-------|---------------|-------|-------------------|
| SIZE | A | B | C | D | E | T | ROD & C WASH SIZE |
| 4 | 5 | 14 5/8 | 1/2 | 2 | 5/6 x 3 1/2 | 5/8 | 3/4 |
| 6 | 7 1/8 | 18 7/8 | 1/2 | 2 | 5/6 x 3 1/2 | 5/8 | 3/4 |
| 8 | 9 5/16 | 19 1/8 | 5/8 | 2 1/2 | 5/6 x 3 3/4 | 5/8 | 3/4 |
| 10 | 11 1/2 | 21 3/8 | 5/8 | 2 1/2 | 5/6 x 3 3/4 | 3/4 | 3/4 |
| 12 | 13 1/2 | 25 1/6 | 5/8 | 3 | 5/6 x 3 3/4 | 3/4 | 3/4 |
| 14 | 13 3/4 | 28 1/4 | 3/4 | 3 | 7/8 x 4 1/2 | 7/8 | 3/4 |
| 16 | 17 7/8 | 31 3/8 | 3/4 | 4 | 7/8 x 4 1/2 | 7/8 | 3/4 |
| 20 | 22 1/8 | 37 3/4 | 3/4 | 4 1/2 | 1 1/4 x 5 | 1 1/8 | 3/4 |
| 24 | 26 3/8 | 44 1/4 | 3/4 | 5 | 1 1/2 x 5 1/2 | 1 1/4 | 3/4 |

| ABOVE ANCHOR STRAP DIMENSIONS (INCHES) | | | | | | |
|--|----------|-------------|--------|---------|---------|-----|
| SIZE | B | G | H | L | R | S |
| 4 | 10 1/8 | 5/8 X 2 1/2 | 13/16 | 12 1/2 | 2 1/2 | 3/4 |
| 6 | 12 1/8 | 5/8 X 2 1/2 | 13/16 | 14 1/2 | 3 9/16 | 3/4 |
| 8 | 14 3/8 | 5/8 X 2 1/2 | 13/16 | 16 3/4 | 4 21/32 | 3/4 |
| 10 | 16 11/16 | 5/8 X 2 1/2 | 1 1/16 | 19 1/16 | 5 3/4 | 3/4 |
| 12 | 19 3/16 | 5/8 X 3 | 1 1/16 | 22 5/16 | 6 3/4 | 7/8 |

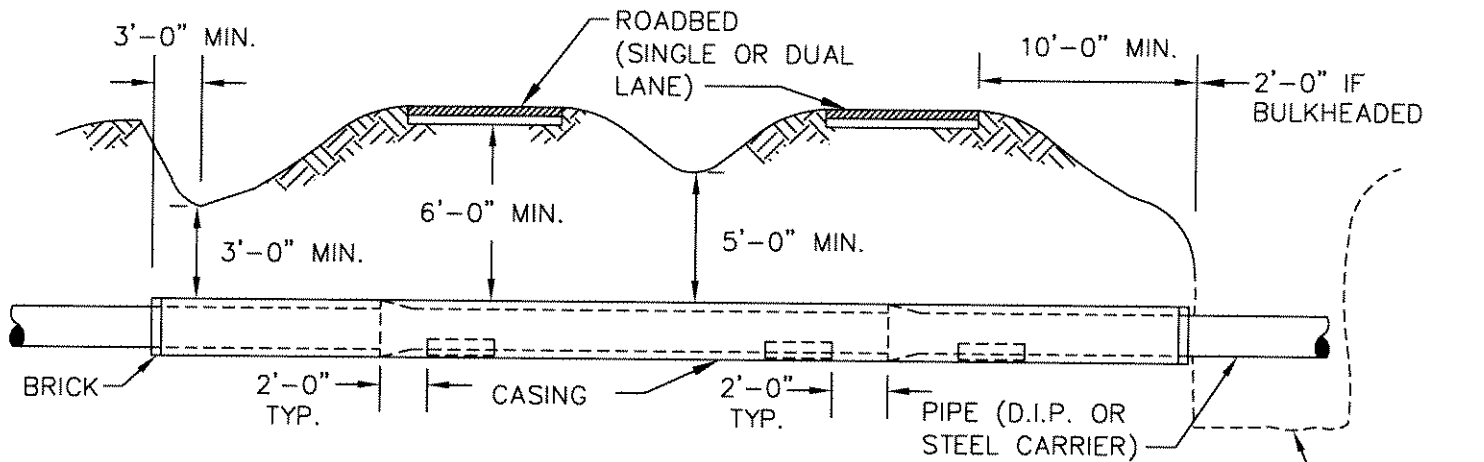
NOTES:

1. INSTALLATION OF, AND MATERIALS FOR RODS, CLAMPS, STRAPS, BOLTS AND WASHERS SHALL CONFORM TO THE NATIONAL FIRE CODES - NFFA NO. 24 LATEST REVISION.
2. YOKES AND ANCHOR STRAPS FOR FITTINGS LARGER THAN 12" SHALL BE DESIGNED AND APPROVED FOR SPECIFIC INSTALLATION.
3. RODS TO BE HIGH TENSILE, NOT ROLLED STEEL WITH TENSILE STRENGTH OF 110,000 P.S.I. AND A MIN. OF 95,000 YIELD STRENGTH.
4. NUTS TO HAVE HEAVY DUTY SEMI-FINISH WITH NATIONAL COURSE THREADS.
5. AFTER INSTALLATION TIE RODS AND CLAMP ASSEMBLY SHALL BE THOROUGHLY COVERED WITH ROYSTON LABORATORIES, INC. ROSKOTE MASTIC ND A939 OR KOPPERS CO., INC. BITUMASTIC SUPERSERVICE BLACK OR APPROVED EQUIVALENT.

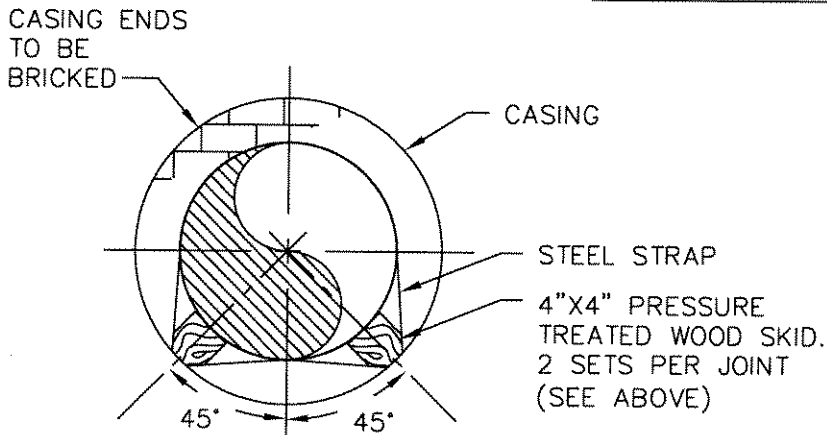
| | | | | |
|------|------|---|--------|---|
| DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  FULTON COUNTY |
| | | THRUST RESTRAINT STRAP AND ROD DETAILS | | |
| BY | DSN | _____ | APPR'D | _____ |
| | DWN | _____ | DATE | _____ |
| | CK'D | _____ | | |
| | | | | FILE NO. R-16 |



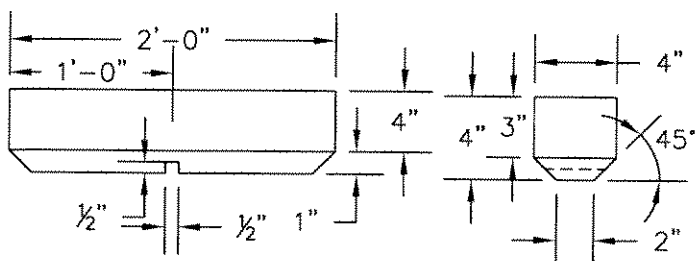
RAIL ROADS



INTERSTATE/LIMITED ACCESS/ STATE ROADS



CASING-END VIEW PIPE ACCESSIBLE

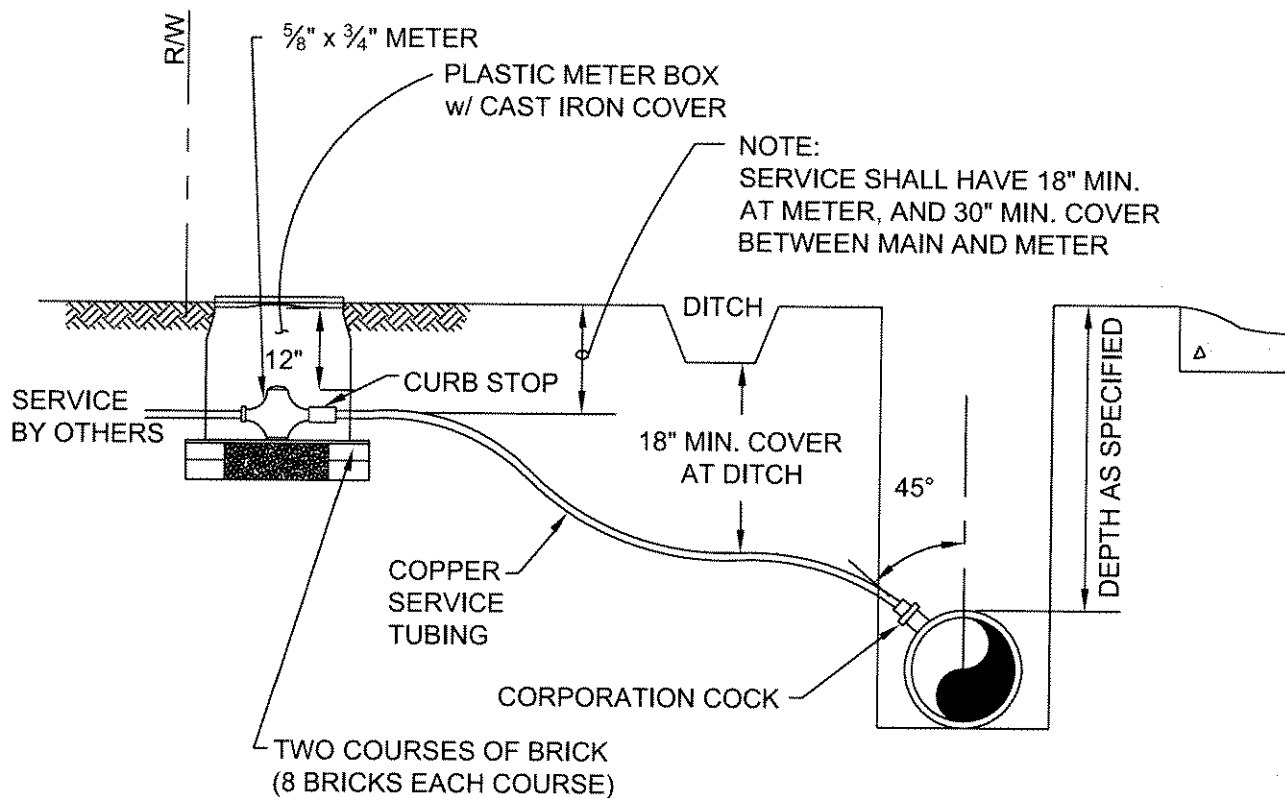


WOOD SKID DETAIL

| BORED CASINGS | | | |
|---------------|-----------|-------------|-------------|
| PIPE SIZE | PIPE O.D. | CASING SIZE | CASING I.D. |
| 6" | 6.90" | 12" | 11.376" |
| 8" | 9.05" | 16" | 14.314" |
| 12" | 13.20" | 20" | 17.938" |
| 16" | 17.40" | 24" | 21.564" |
| 20" | 21.60" | 28" | 27.0" |
| 24" | 25.80" | 36" | 35.0" |

NOTE: IF CASING UNDER RAILROAD IS NOT COATED OR CATHODICALLY PROTECTED, INCREASE THICKNESS .062"

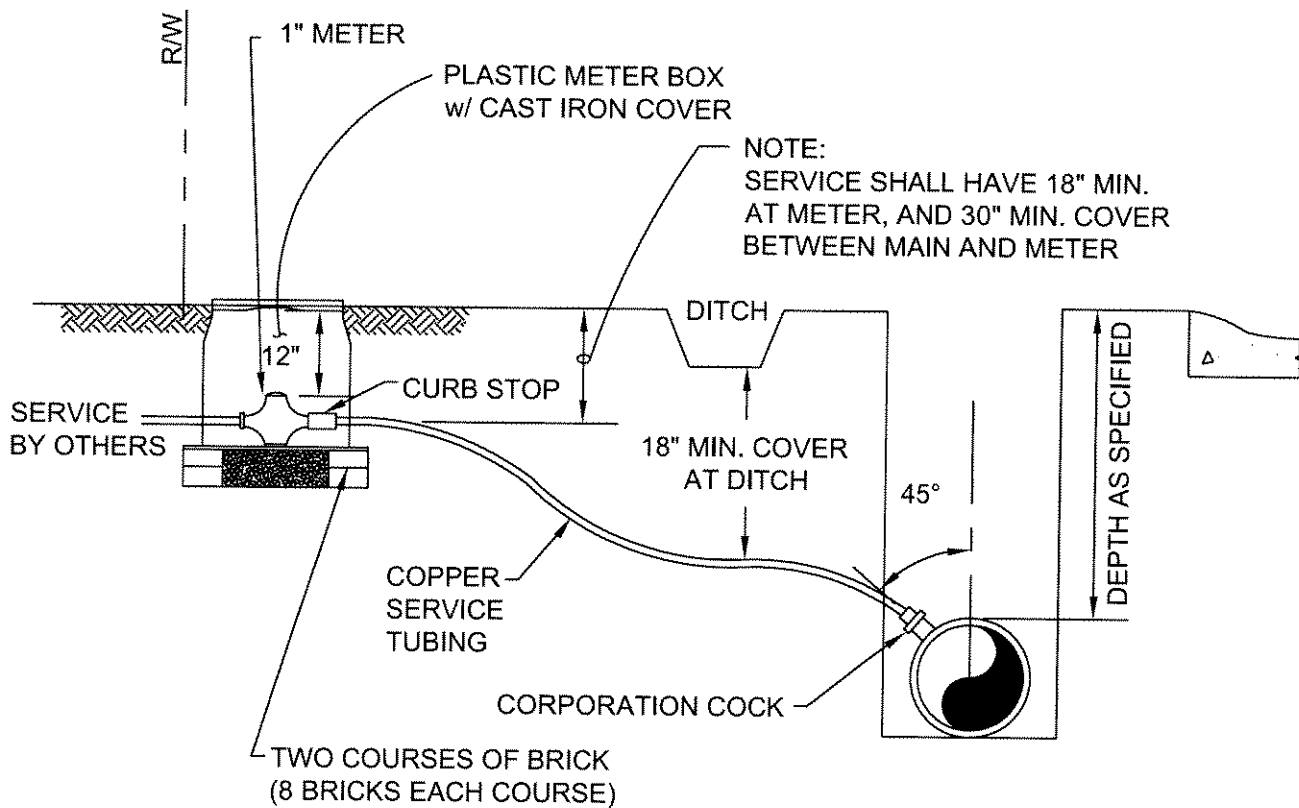
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|-----------|------|---|------------------|
| DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | CASING / PIPE SUPPORT INSTALLATION | |
| BY | DSN | APPR'D | FILE NO. R-17 |
| | DWN | DATE | |
| REVISIONS | CK'D | | |



NOTES:


1. SERVICE LINE SHALL BE 3/4" DIAMETER FROM MAIN TO METER
2. USE ALL FLARE JOINTS
3. INSTALLATION SHALL ALLOW ADEQUATE ROOM TO REMOVE AND/OR REPAIR METER.
4. METER BOX SHALL BE APPROXIMATELY 12" x 18".

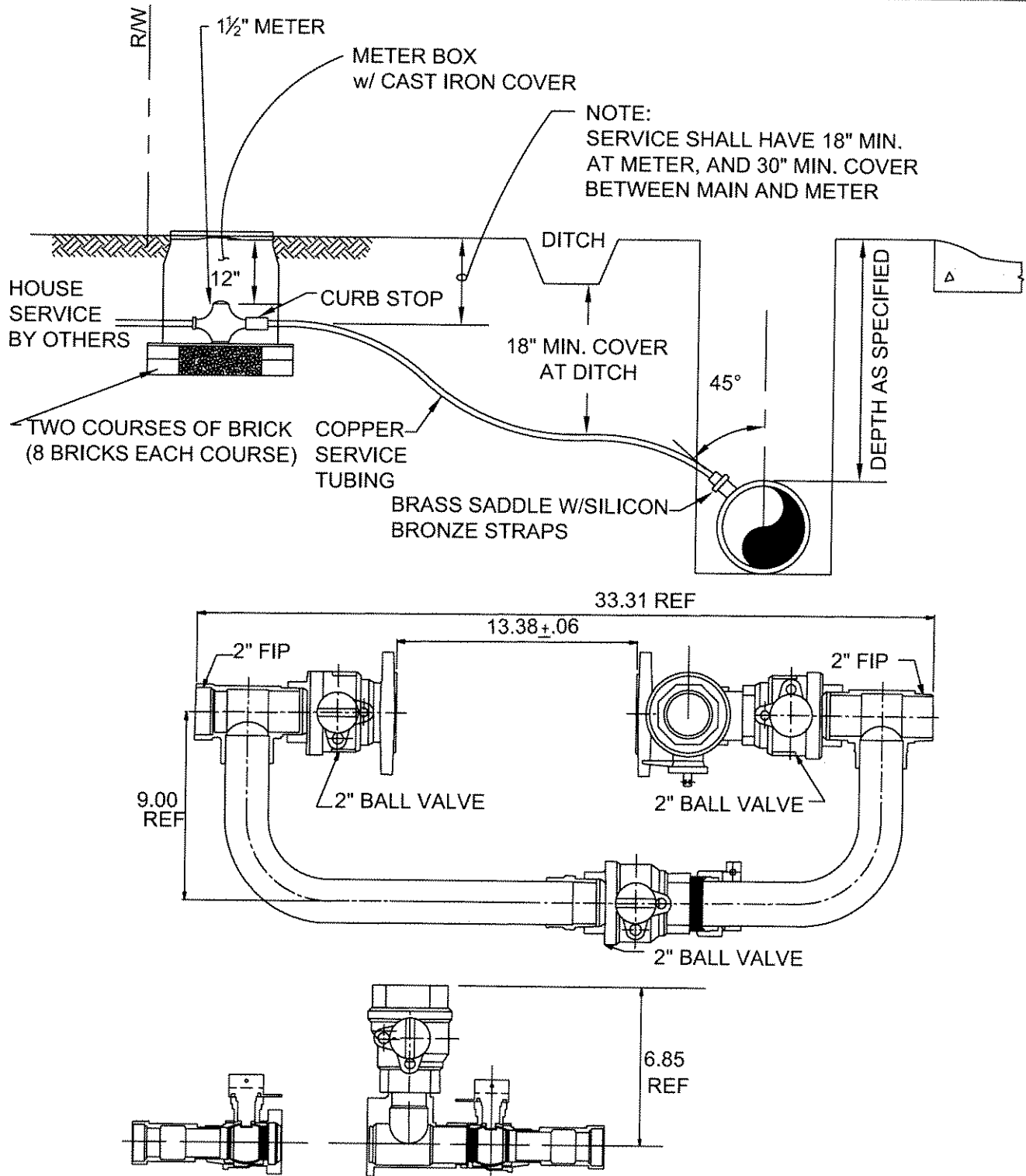
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|---|----------------------------|---|--|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | 5/8" METER INSTALLATION | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ | FILE NO. R-18 | |



NOTES:

1. SERVICE LINE SHALL BE 1" FROM MAIN TO METER.
2. USE ALL FLARE JOINTS.
3. INSTALLATION SHALL ALLOW ADEQUATE ROOM TO REMOVE AND/OR REPAIR METER.
4. METER BOX SHALL BE APPROXIMATELY 18" x 24".

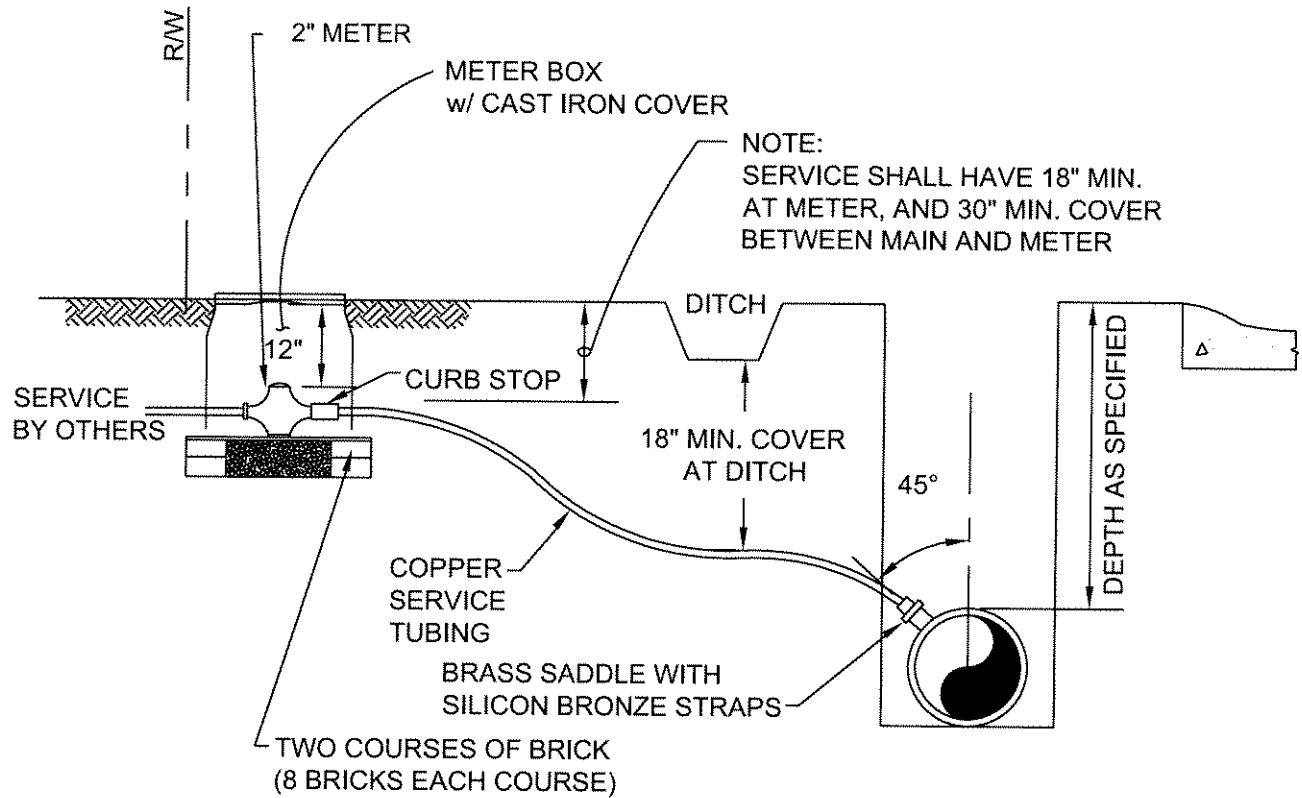
| | | | |
|--------------------------------------|----------------------------|---|--|
| BY REVISIONS DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | 1" METER INSTALLATION | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ |  FULTON COUNTY FILE NO. R-19 | |



NOTES:

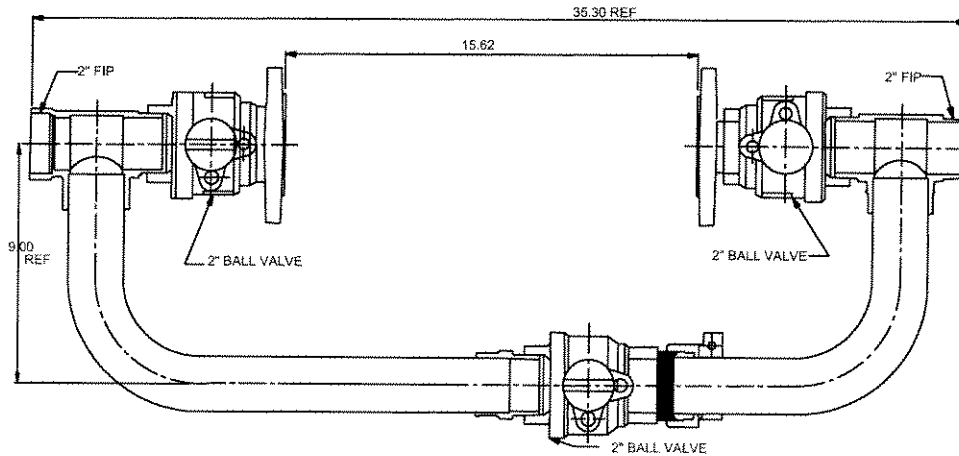
1. SERVICE LINE SHALL BE 11/2" FROM THE MAIN METER
2. USE ALL COMPRESSION GRIP JOINTS
3. INSTALLATION SHALL ALLOW ADEQUATE ROOM TO REMOVE OR REPLACE METER
4. METER BOX SHALL BE APPROXIMATELY 24" X 36"

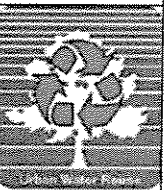
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
|---|----------------------------|
| 1 1/2" METER INSTALLATION | |
| BY _____ DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ |
| FILE NO. R-20 | |

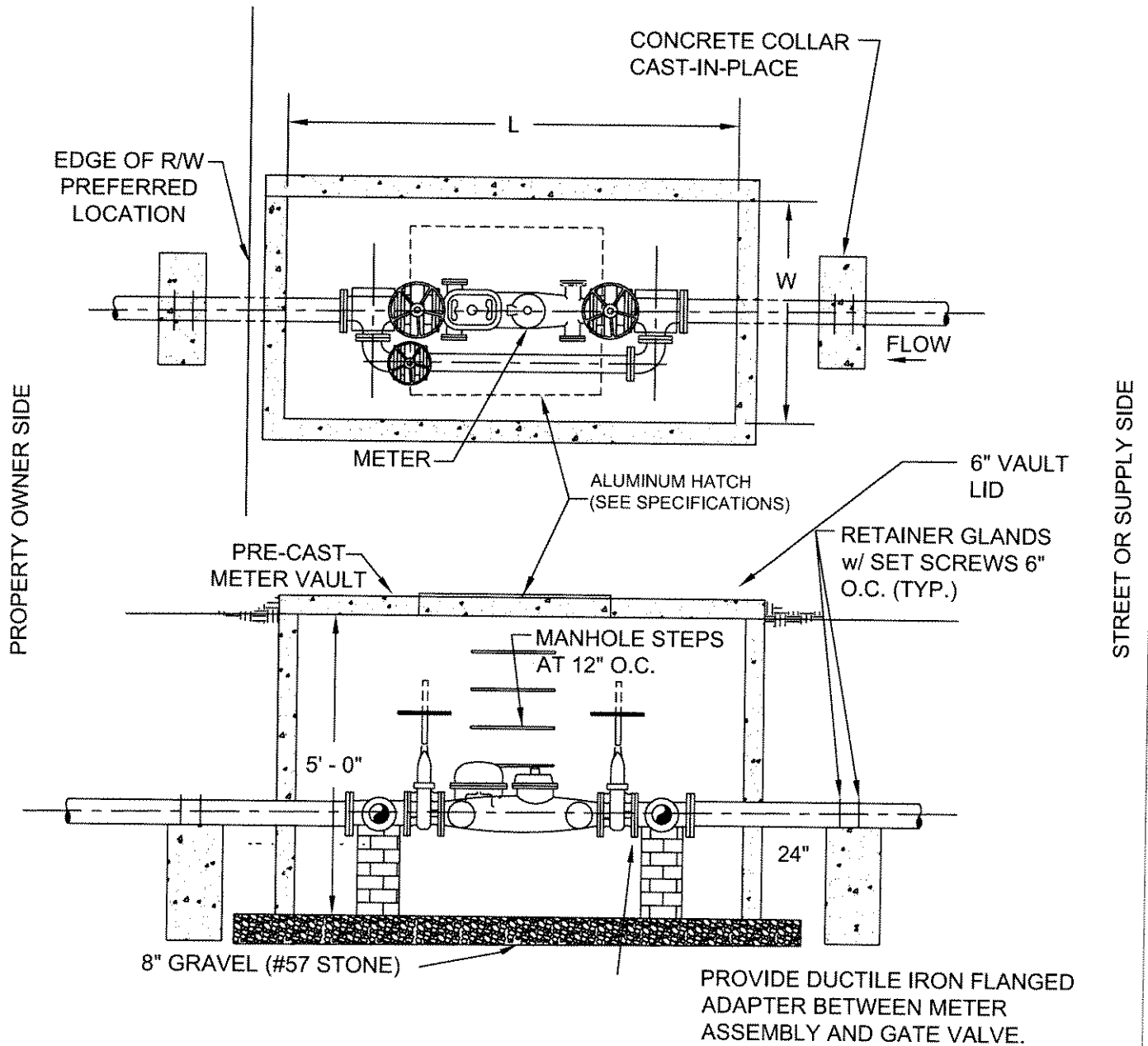


NOTES:


1. SERVICE LINE SHALL BE 2" DIAMETER FROM THE MAIN TO THE METER
2. USE ALL COMPRESSION GRIP JOINTS.
3. INSTALLATION SHALL ALLOW ADEQUATE ROOM TO REMOVE AND/OR REPAIR METER.
4. METER BOX SHALL BE APPROXIMATELY 24" x 36".



| | | | |
|---|----------------------------|--|--|
| BY _____ DATE _____ REVISIONS _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | 2" METER INSTALLATION | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ |  FILE NO. R-21 | |

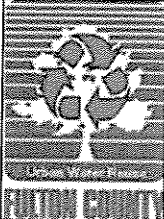


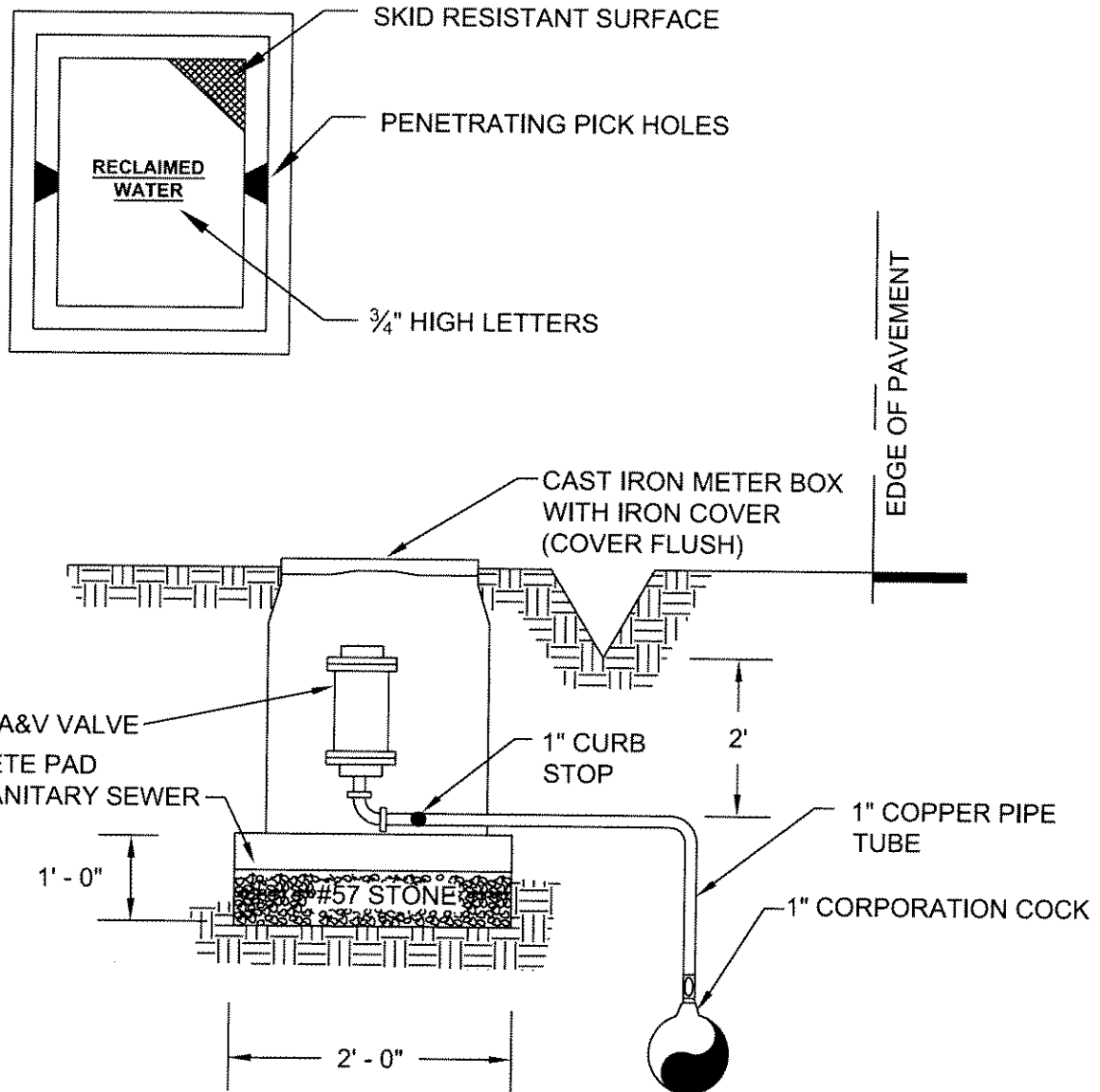
| METER SIZE | VAULT | | | HATCH SIZE |
|---------------|-------|----|----|---------------|
| | L | W | D | |
| 3" | 9' | 5' | 6' | 3'6" X 3'6" |
| 4" | 9' | 5' | 6' | 3'6" X 3'6" |
| 6" | 12' | 6' | 6' | 4' X 6' |
| 8" | 12' | 6' | 6' | 4' X 6' |

| | | | | |
|---|--|---|--|--|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  FULTON COUNTY |
| | | LARGE METER AND VAULT INSTALLATION | | |
| DSN _____ DWN _____ CK'D _____ | | APPR'D _____ DATE _____ | | FILE NO. R-22 |

NOTES:

1. BOXES EXCEEDING 5' IN DEPTH MUST BE APPROVED BY FULTON COUNTY.
2. WHEN METER BOX CANNOT BE LOCATED ENTIRELY ON R/W, A PERMANENT EASEMENT SHALL BE OBTAINED TO PREVENT FENCES OR OTHER OBSTRUCTIONS FROM BEING ERECTED AROUND THE METER BOX.
3. COVER OPENING & STEPS TO BE PLACED NEAREST THE METER REGISTER.
4. THE METER MUST BE INSTALLED WITH AT LEAST 8 DIAMETERS OF STRAIGHT PIPE SAME SIZE AS METER ON THE INLET SIDE TO PERMIT ON-SITE MAINTENANCE AND CALIBRATION. A STRAINER MAY BE PROVIDED IN LIEU OF THE STRAIGHT PIPE IN ACCORDANCE WITH THE METER MANUFACTURER'S RECOMMENDATIONS. AN INLET AND OUTLET GATE VALVE WITH BYPASS LINE ARE REQUIRED (SEE ILLUSTRATION).
5. THESE BOXES ARE NOT TO BE INSTALLED IN TRAFFIC AREAS WITHOUT PRIOR PERMISSION FROM FULTON COUNTY.
6. ALL VALVES AND FITTINGS INSIDE THE VAULT SHALL BE FLANGED.
7. ALL FITTINGS OUTSIDE THE VAULT SHALL BE PUSH-ON JOINT WITH AMERICAN 'FAST-GRIP' GASKETS OR APPROVED EQUAL.
8. ALL METERS SHALL COME EQUIPPED WITH A TOUCHREAD OR TOUCHLESS SENSOR COMPATIBLE WITH FULTON COUNTY'S METER READING EQUIPMENT.
9. THIS DETAIL ALSO AUTHORIZED FOR INSTALLATION OF 3" AND LARGER RE-USE METERS.
10. HATCH SHALL BE 4' X 6', DOUBLE LEAF, FLUSH MOUNT, 1/4" DIAMOND PLATE, ALUMINUM DOORS LOCKABLE WITH A 5/8" ROD. HATCH SHALL BE BILCO # PDCM-3 OR PRE-APPROVED EQUAL FOR 6" & 8" METERS.. HATCH SHALL BE 3'6" X 3'6" SINGLE LEAF FLUSH MOUNT 1/4" DIAMOND PLATE, ALUMINUM DOOR LOCKABLE WITH 5/8" ROD. HATCH SHALL BE B.LCO#PCM - 5 OR PRE-APPROVED EQUAL FOR 3" & 4" METERS.

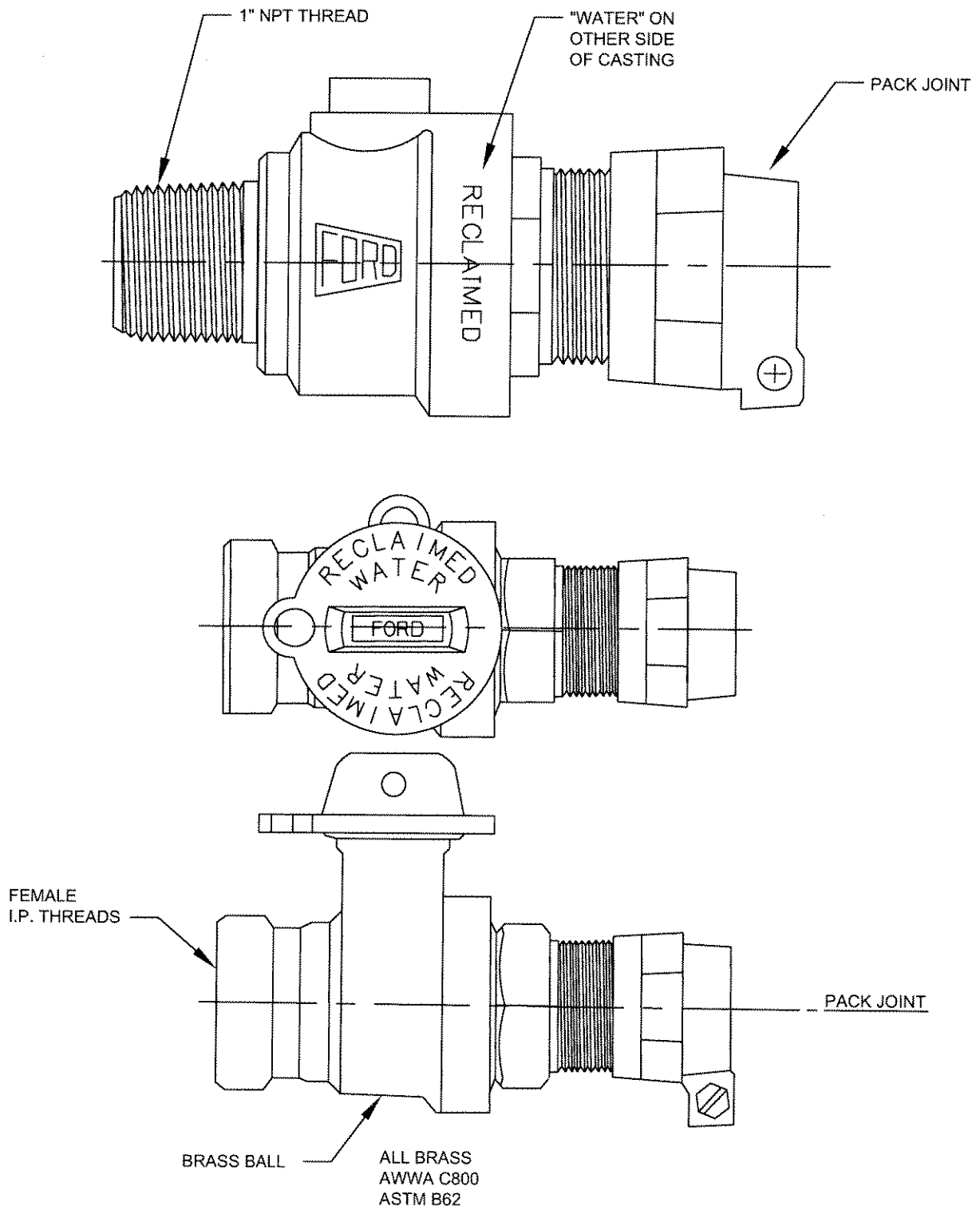
| | | | | | | |
|----|-----------|------|---|--------|---|-------------------------|
| | | DATE | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | | | |
| | | | LARGE METER AND VAULT INSTALLATION NOTES | | | |
| BY | REVISIONS | DATE | | |  | |
| | | | DSN | APPR'D | | FILE NO. R-23 |
| | | | DWN | DATE | | |
| | CK'D | | | | | |




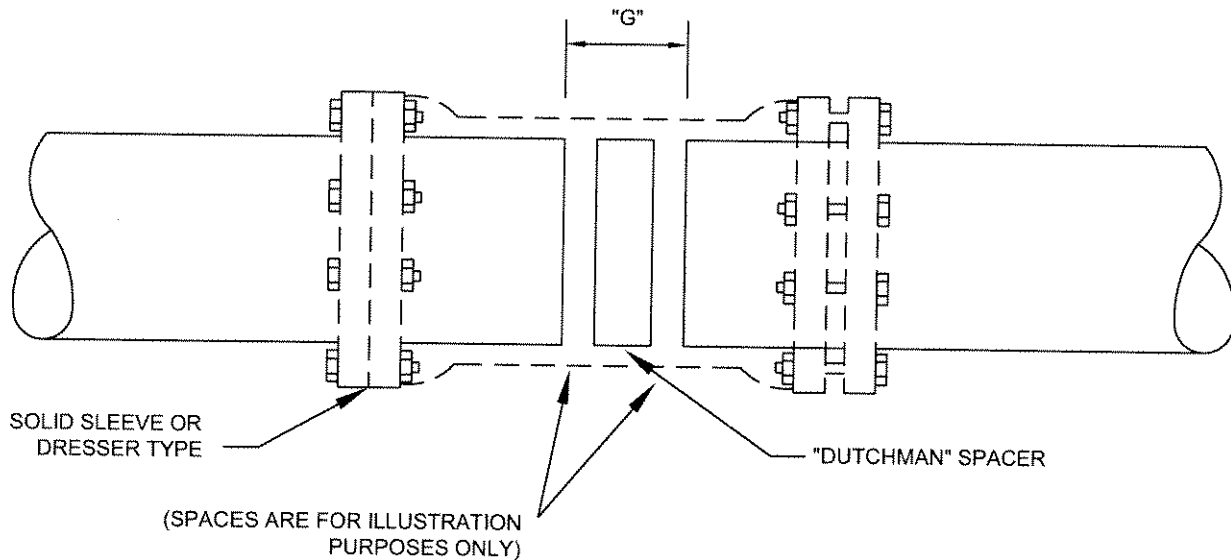
NOTES:

1. VALVE MARKER REQUIRED.
2. A&V VALVE AND COPPER SHALL BE SIZED IN ACCORDANCE WITH VALVE MANUFACTURER'S RECOMMENDATIONS.
3. METER BOX SHALL BE CDR 10 X 15HC OR APPROVED EQUAL
4. A & V VALVE SHALL BE VENT-O-MAT SERIES RBX OR EQUAL

| | | | |
|---|--|---|--|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | NPRL AIR AND VACUME RELEASE VALVE ASSEMBLY 1" OR 2" | |
| DSN _____ DWN _____ CK'D _____ | | APPR'D _____ DATE _____ | |
| | | FILE NO. R-24 | |




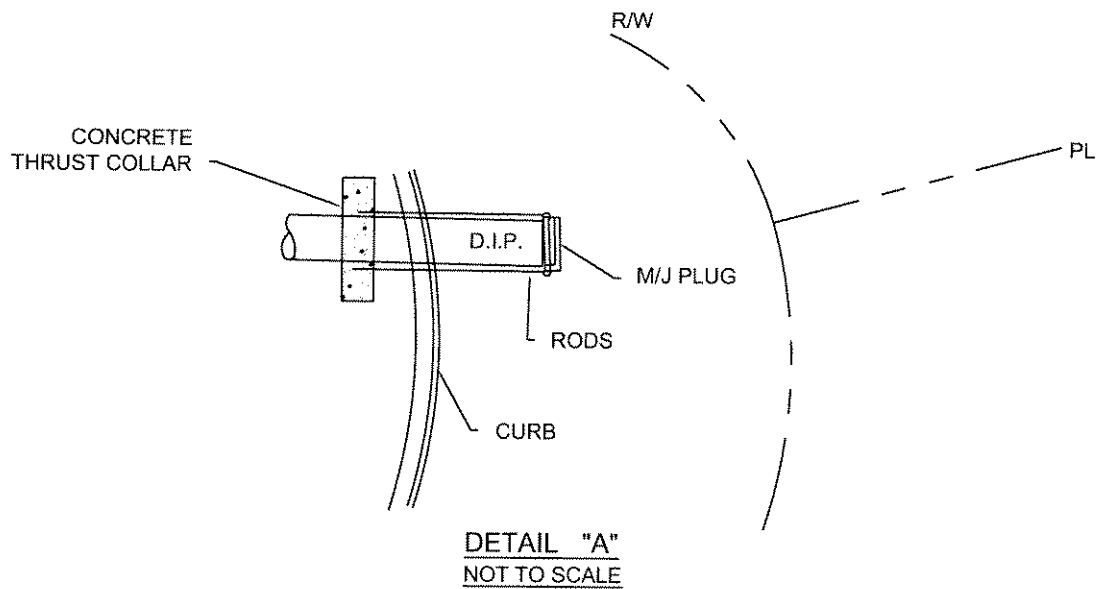
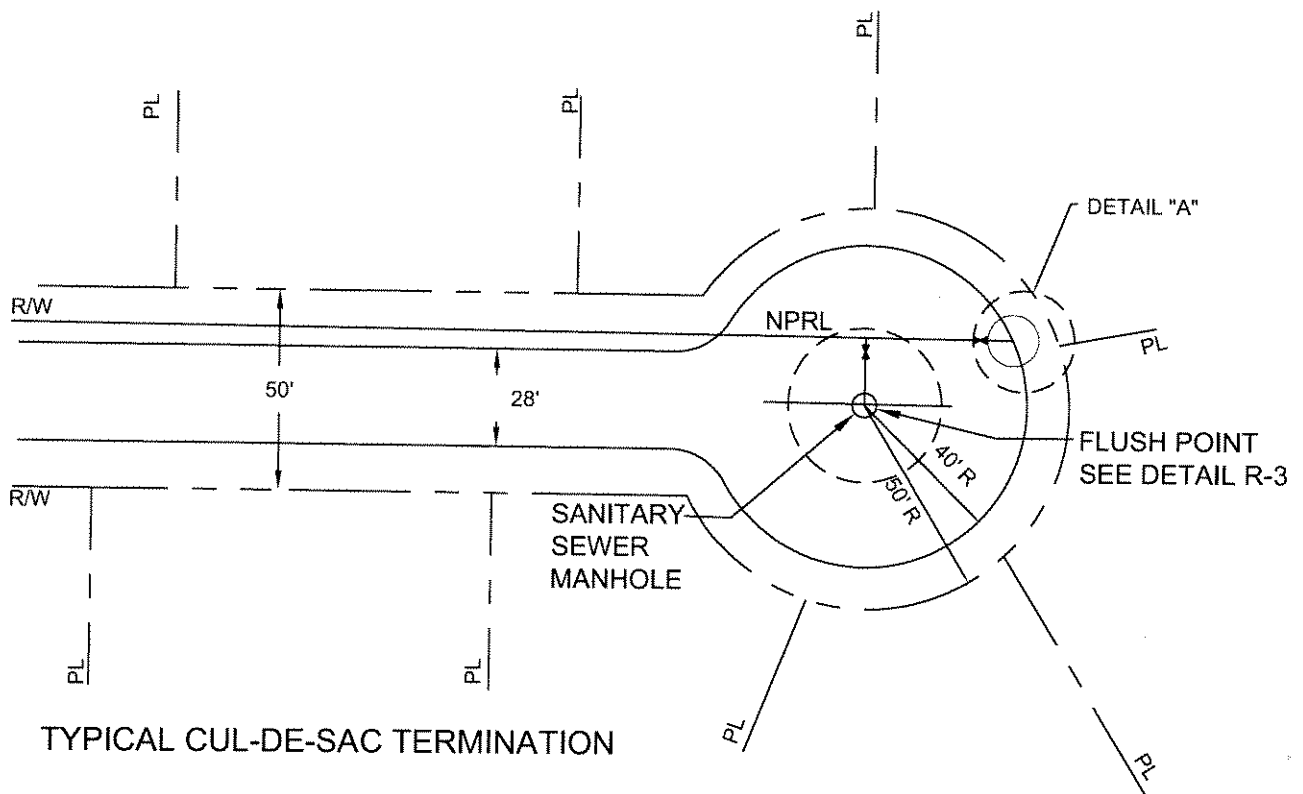
| | | | | |
|------|-----------|---|--------|---|
| DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| | | BRASS FITTINGS FOR NPRL METER INSTALLATION | | |
| BY | REVISIONS | DSN | APPR'D | FILE NO. R-25 |
| | | DWN | DATE | |
| | | CK'D | | |



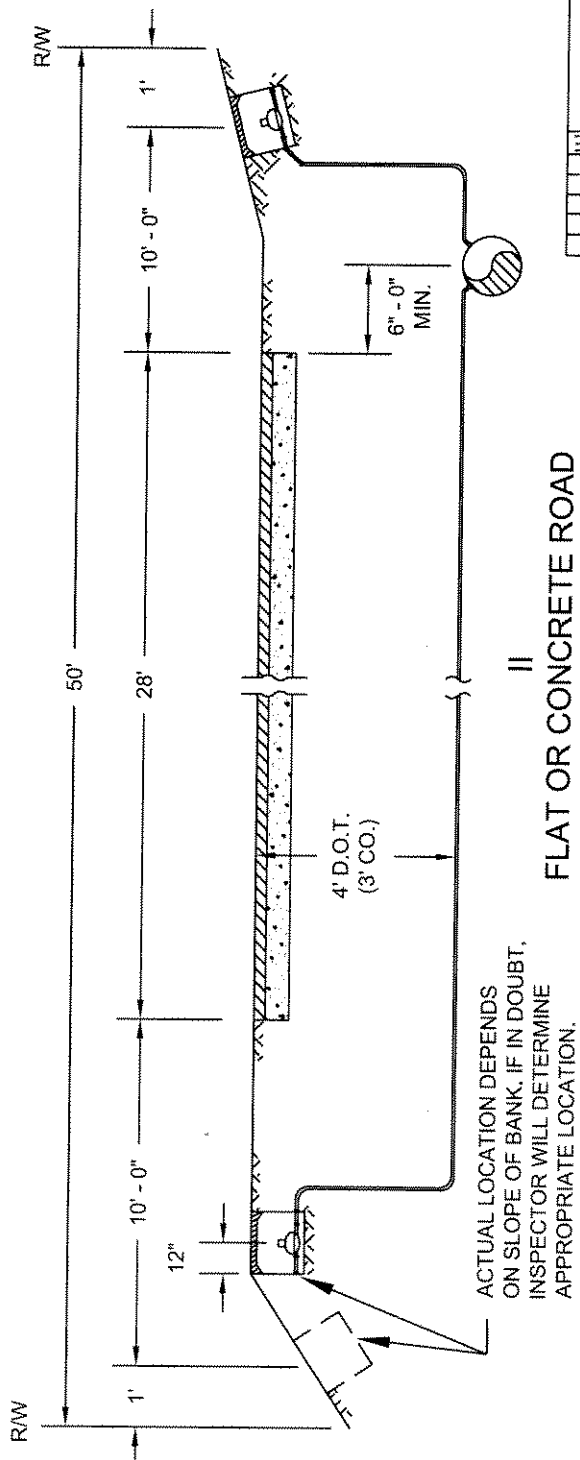
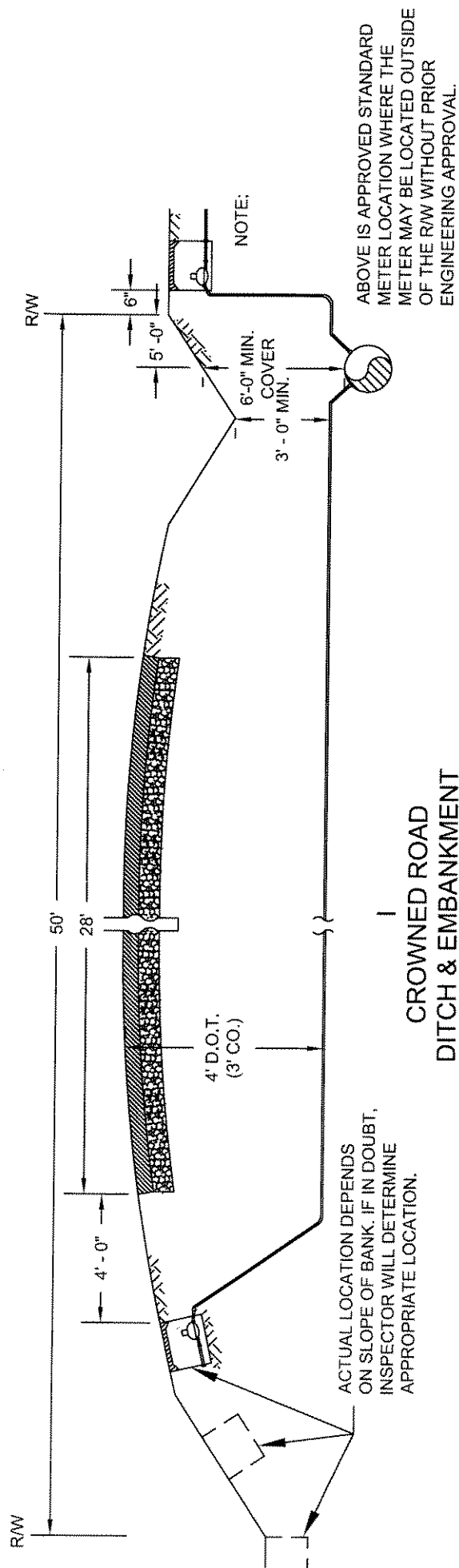
NOTES:


1. IF "G" IS GREATER THAN $\frac{1}{2}$ " AT IT'S NARROWEST POINT, THEN A FULL CIRCLE SPACER OR "DUTCHMAN" MUST BE CUT AND PLACED IN THE GAP BEFORE THE SLEEVE IS USED TO CLOSE THE JOINT.
2. THE "DUTCHMAN" SPACER SHALL BE CUT TO A WIDTH NO LESS THAN $\frac{1}{4}$ " LESS THAN THE NARROWEST WIDTH OF "G".
3. EACH PIPE SPIGOT SHALL BE MARKED TO INDICATE THE POINT WHERE THE SLEEVE WILL BE PROPERLY CENTERED OVER THE POINT.
4. "FULL-CIRCLE" REPAIR CLAMPS ARE NOT APPROVED FOR JOINING PIPE. SUCH CLAMPS ARE SPECIFICALLY DESIGNED FOR REPAIRS ONLY.
5. IF "STEEL" SLEEVE IS USED, PROPERLY COAT BEFORE BACKFILLING.

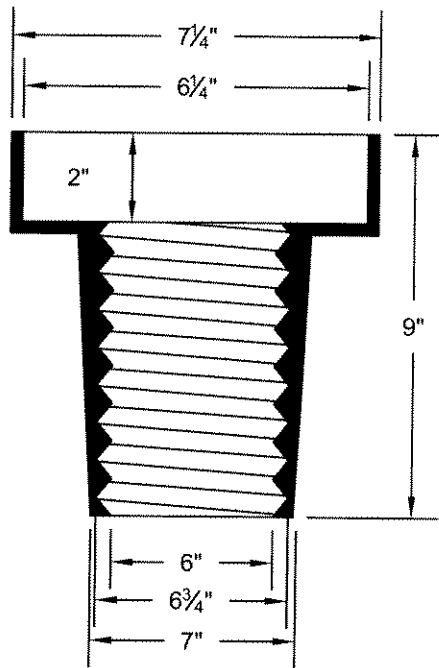
| | | | |
|--------------------------------------|----------------------------|--|--|
| BY REVISIONS DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | PIPE JOINING USE OF SOLID SLEEVE | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ |  FILE NO. R-26 | |



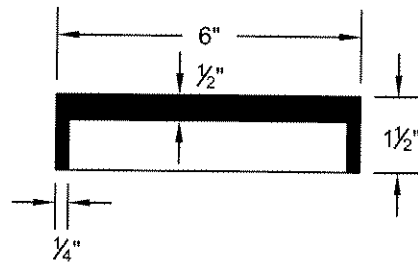
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|--|--|-----------|--|----------|--|
| BY | | REVISIONS | | DATE | |
| | | | | | |
| <p align="center">FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES</p> | | | | | |
| <p align="center">NPRL TERMINATION CUL-DE-SAC</p> | | | | | |
| DSN | | APP'R'D | | FILE NO. | |
| DWN | | DATE | | R-27 | |
| CK'D | | | | | |



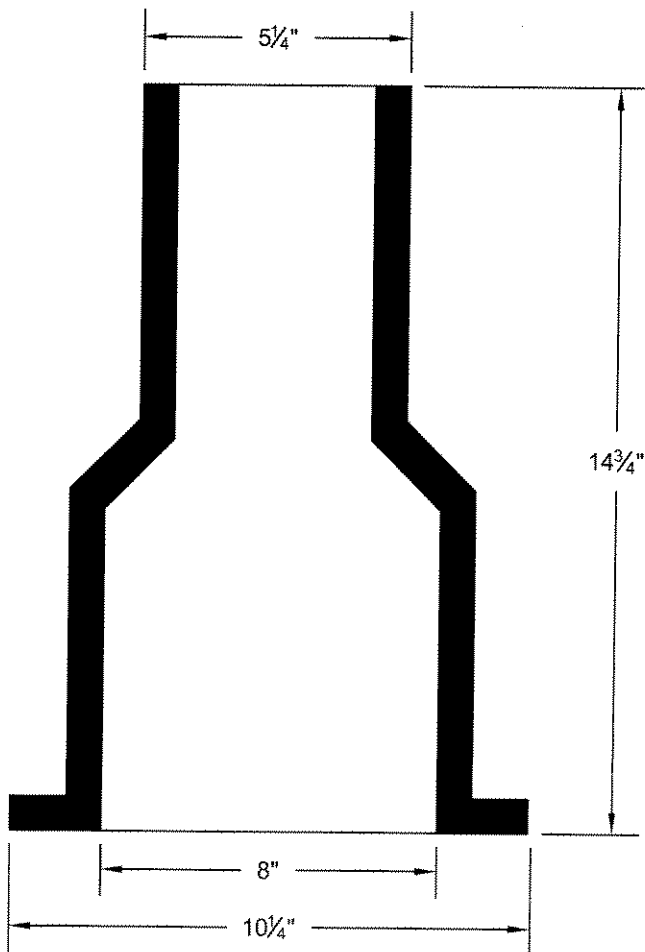
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|---|-----------------|--|--------------|--------------------------|
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  | | FILE NO. R-28 |
| METER LOCATIONS 3/4" TO 2" | | DSN _____ | APPR'D _____ | DATE _____ CK'D _____ |
| | | DWN _____ | DATE _____ | |
| DATE _____ | REVISIONS _____ | | BY _____ | |
| | | | | |
| | | | | |
| | | | | |



TOP SECTION

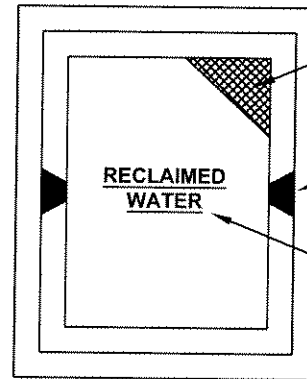


COVER



VALVE BOX

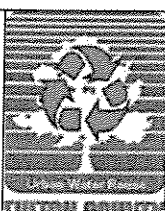
BOTTOM SECTION

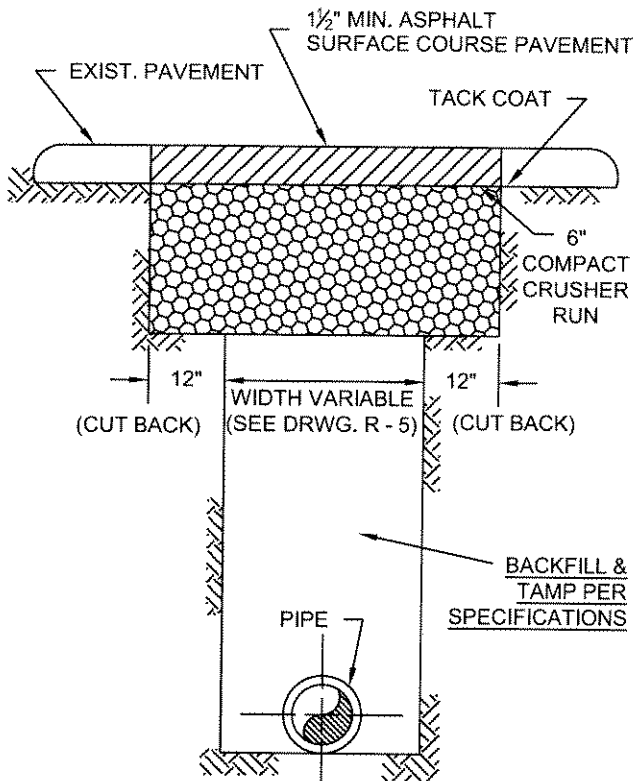


SKID RESISTANT
SURFACE

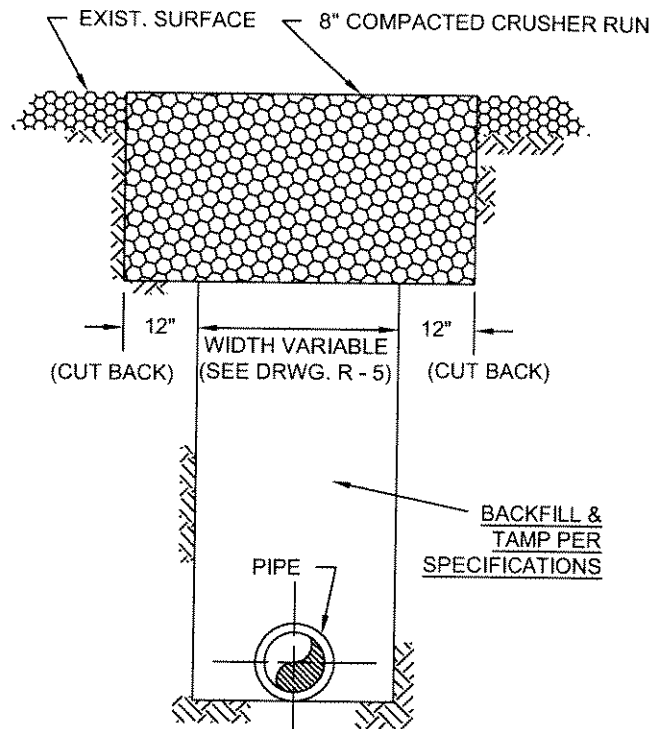
PENETRATING
PICK HOLES

3/4" HIGH LETTERS
RECLAIMED WATER

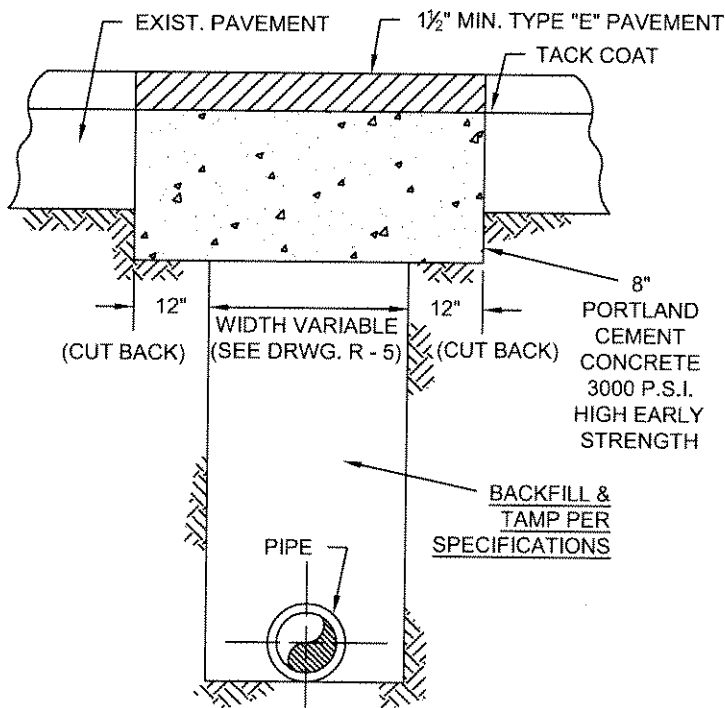
| | | | | | | |
|------|-------|-----------|-------|---|--|---|
| BY | | REVISIONS | DATE | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| | | | | VALVE BOX | | |
| DSN | _____ | APPR'D | _____ | FILE NO. R-29 | | |
| DWN | _____ | DATE | _____ | | | |
| CK'D | _____ | | | | | |



TYPE "A" CUT REPAIR DETAIL
T & G OR ASPHALT RDS. (DRIVEWAYS, R-31)




TYPE "B" CUT REPAIR DETAIL
DIRT OR GRAVEL RDS. (DRIVEWAYS, R-31)

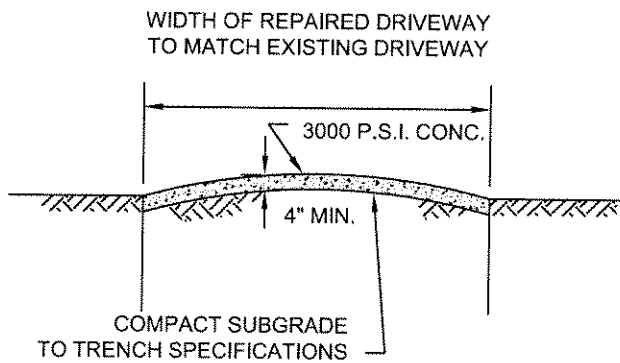
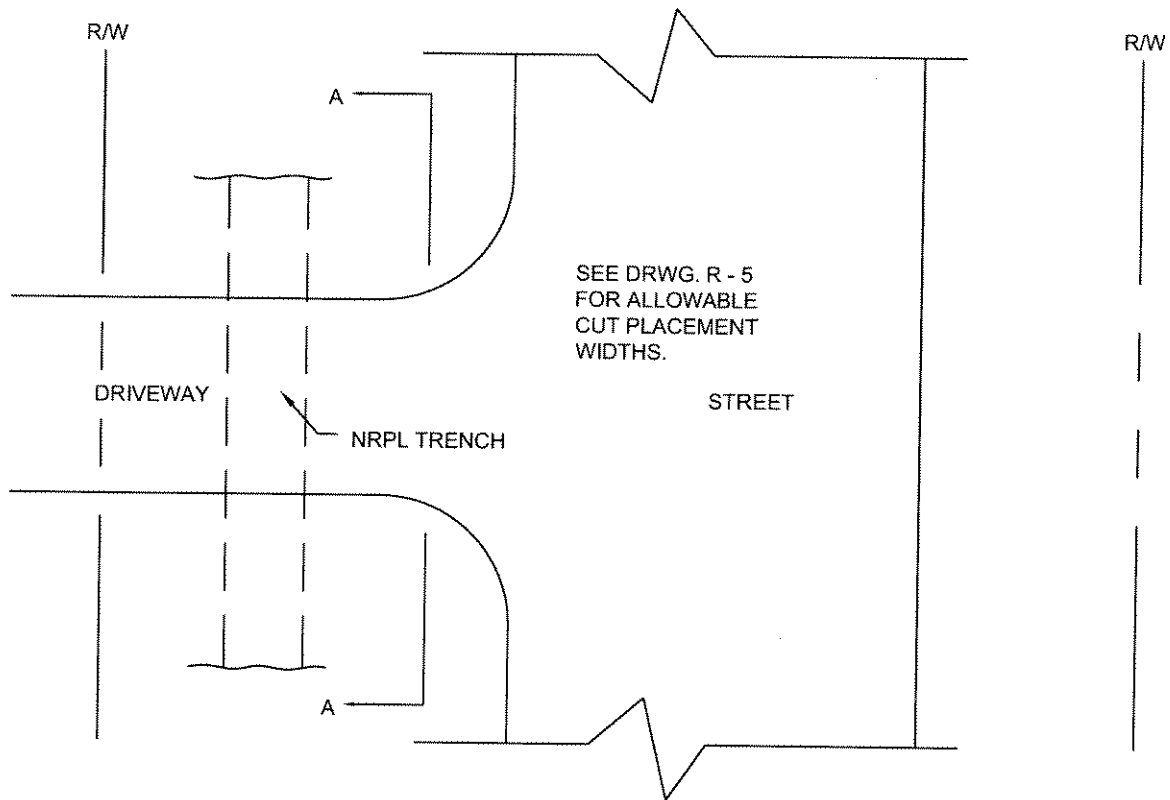


TYPE "C" CUT REPAIR DETAIL
GEORGIA D.O.T. AND FULTON CO.

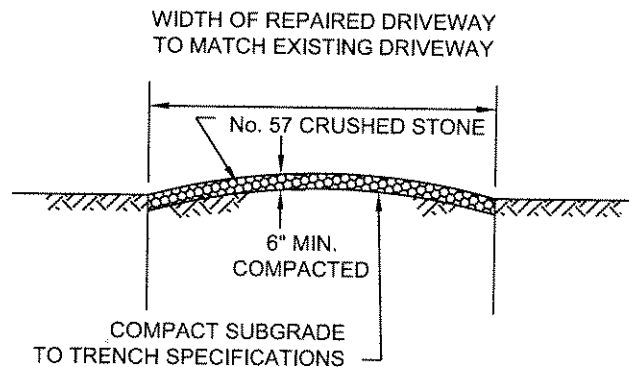
NOTES:

1. ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH THE GA. D.O.T.'s "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", 1983 EDITION OR LATEST REVISION THERETO.
2. FOR TYPE "C", THE CONTRACTOR SHALL COVER THE POURED CONCRETE WITH STEEL PLATES A MINIMUM OF 24 HOURS TO ALLOW ADEQUATE SET-UP.
3. CONTRACTOR'S TRAFFIC CONTROL PLAN MUST BE APPROVED BY THE AUTHORITY HAVING JURISDICTION BEFORE WORK BEGINS.
4. FINAL APPROVAL OF CONTRACTOR'S PAVEMENT CUT REPAIRS RESIDES WITH THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL MEET ALL REQUIREMENTS OF SAID AUTHORITY.

| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  FULTON COUNTY |
|---|--------------------------------------|--|
| PAVEMENT REPAIRS TYPES A, B, AND C | | |
| BY _____ REVISIONS _____ DATE _____ | DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ |
| | | FILE NO. R-30 |



CONCRETE
"A" - "A"



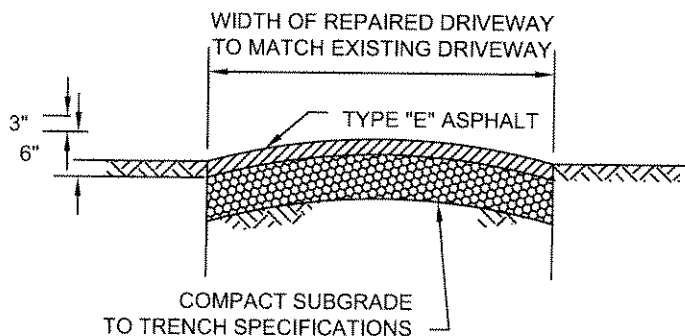
GRAVEL
"A" - "A"

-- FINISH SURFACE OF REPAIRED AREA TO MATCH EXISTING SURFACE. EDGES OF CUT TO BE SAWN VERTICAL. EXPANSION MATERIAL TO BE USED AS DIRECTED.


NOTE:

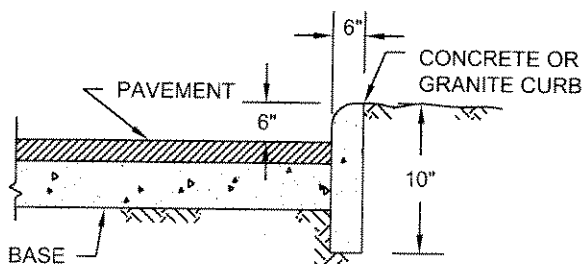
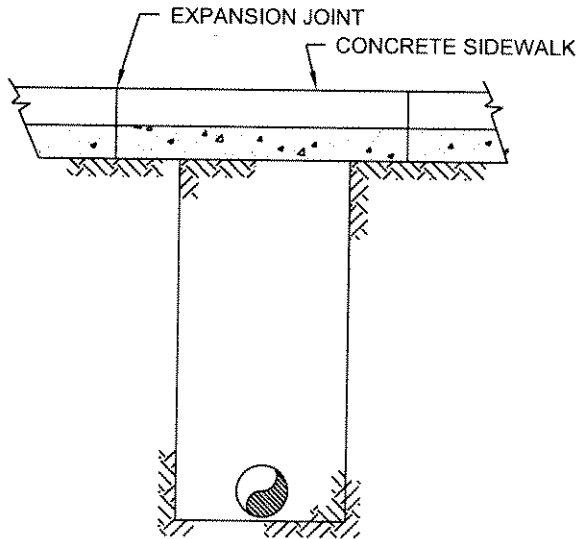
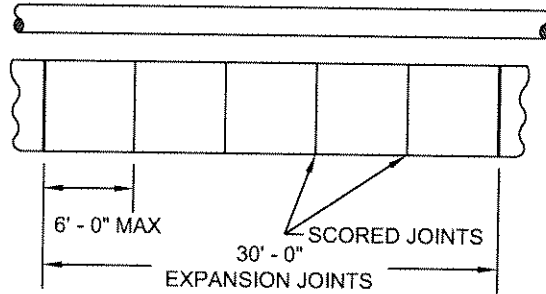
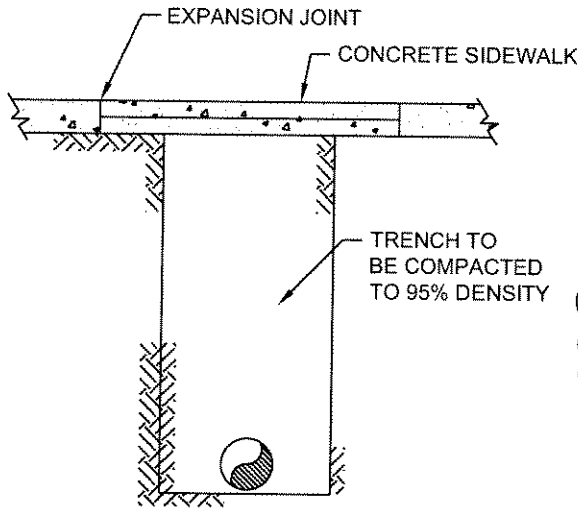
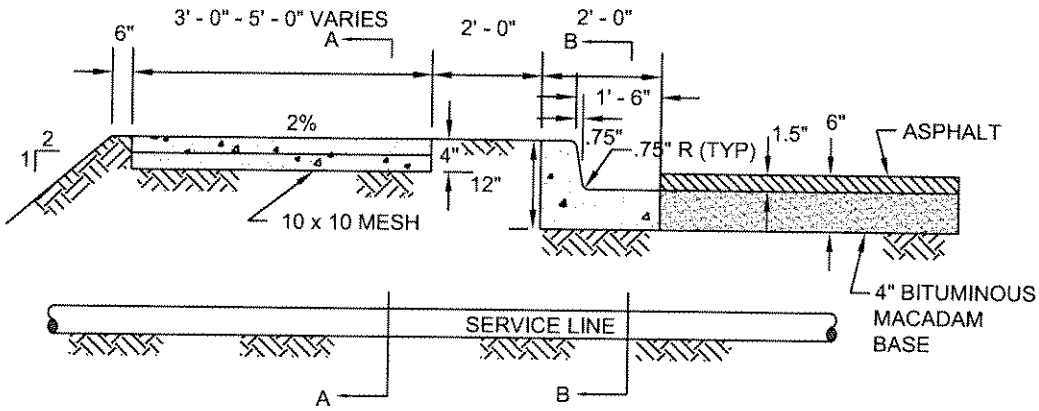
1. FINISHED GRADE TO BE FLUSH WITH THE EDGE OF THE DRIVE - TYPICAL ALL DRIVES.

(SEE DRWG. R-30 FOR STREET CUT REPAIRS)



ASPHALT
"A" - "A"

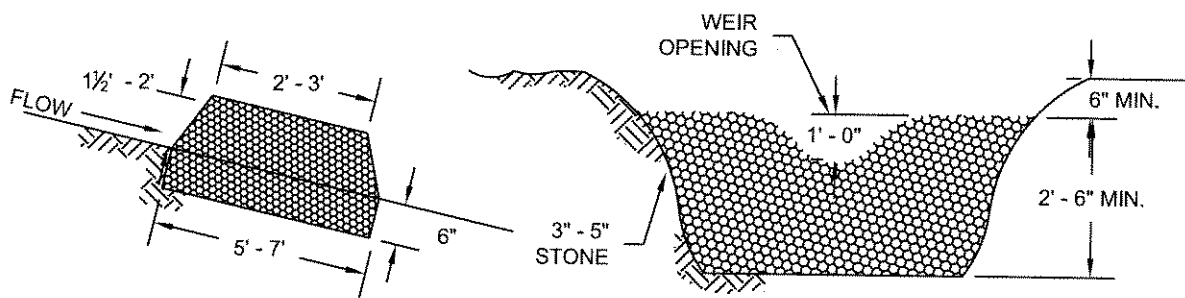
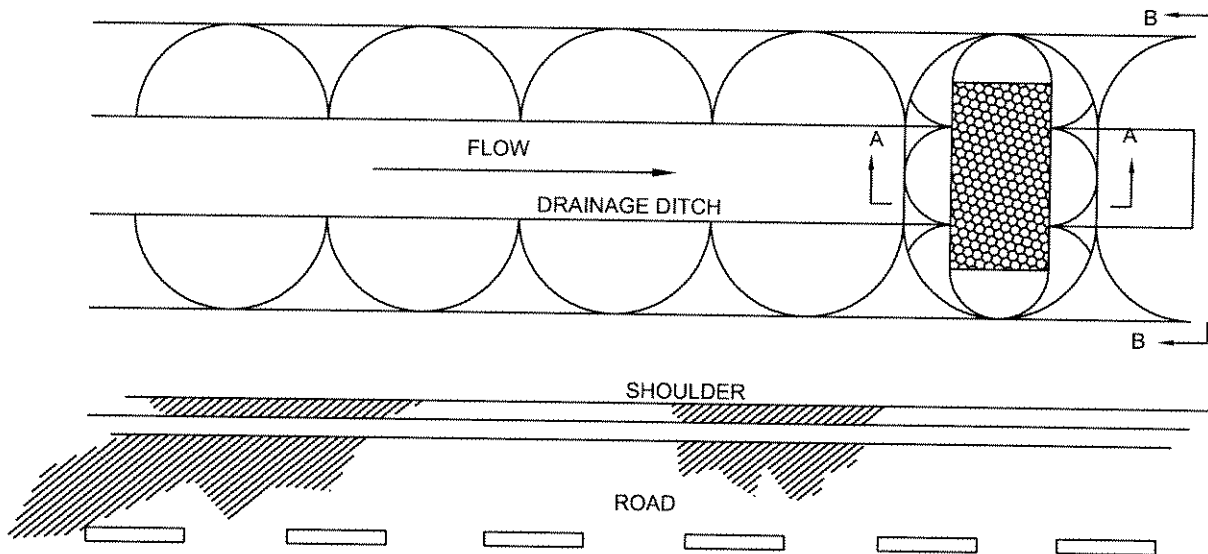
| | | | | |
|---|--------------|---|--|---|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| | | DRIVEWAY CUT REPAIRS CONCRETE, GRAVEL AND ASPHALT | | |
| DSN _____ | APPR'D _____ | FILE NO. R-31 | | |
| DWN _____ | DATE _____ | | | |
| CK'D _____ | | | | |



NOTES:

1. DETAILS ARE TYPICAL.
2. REPLACE SIDEWALKS, CURB AND GUTTER AND CURBING TO MATCH EXISTING MATERIALS AS DIRECTED.

| | | | |
|------|-----------|---|-------------------------|
| DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | SIDEWALK, CURB AND GUTTER REPAIRS | |
| BY | REVISIONS | DSN | APPR'D |
| | | DWN | DATE |
| | | CK'D | |
| | | | FILE NO. R-32 |

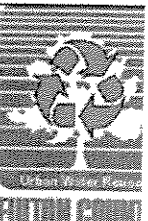


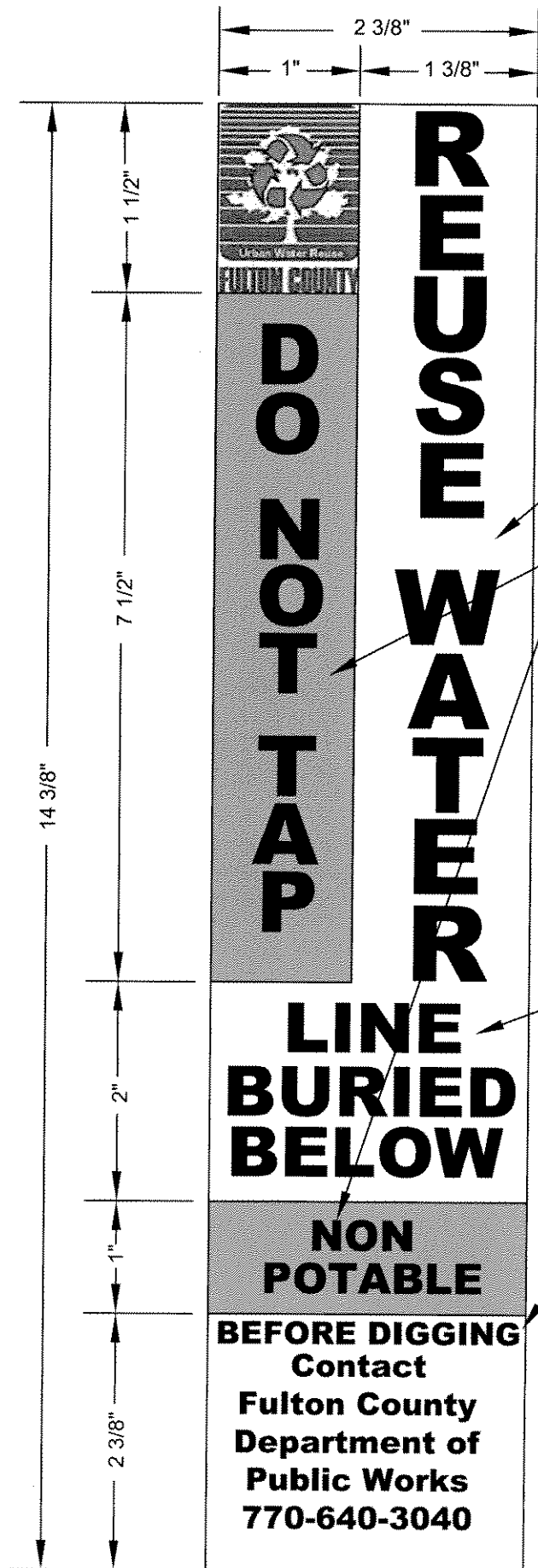
SECTION A - A

SECTION B - B

NOTES:

1. USE AND LOCATION OF CHECK DAMS SHALL BE AS DIRECTED BY INSPECTOR.

| | | | | |
|----------------------|-------|---|-------|---|
| BY REVISIONS DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| | | EROSION CONTROL CHECK DAMS | | |
| DSN | _____ | APPR'D | _____ | FILE NO. R-33 |
| DWN | _____ | DATE | _____ | |
| CK'D | _____ | | | |



NOTES


1. LABELS TO BE PROVIDED BY FULTON COUNTY INSPECTOR AND PROJECT MANAGER
2. LABELS TO BE PLACED ON BOTH SIDES OF WHITE DRIVABLE MARKERS - CARSONITE #CIB-380
3. MARKERS TO BE INSTALLED WITH EACH VALVE OR AS DIRECTED BY FULTON COUNTY
4. LINE MARKERS TO BE INSTALLED AS DIRECTED BY FULTON COUNTY

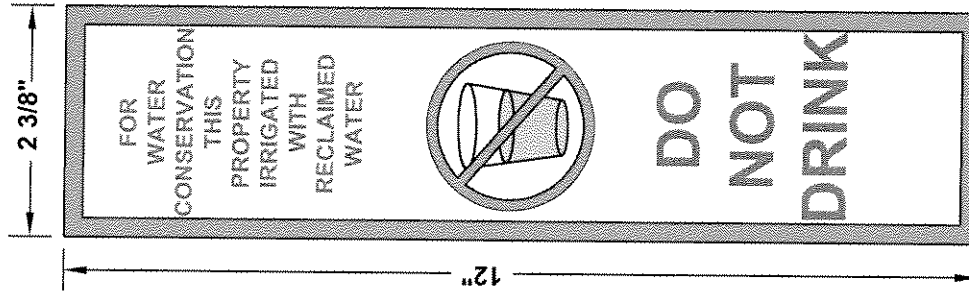
BLACK LETTERING ON WHITE BACKGROUND

BLACK LETTERING ON PURPLE BACKGROUND (Color to be approved by Fulton County)

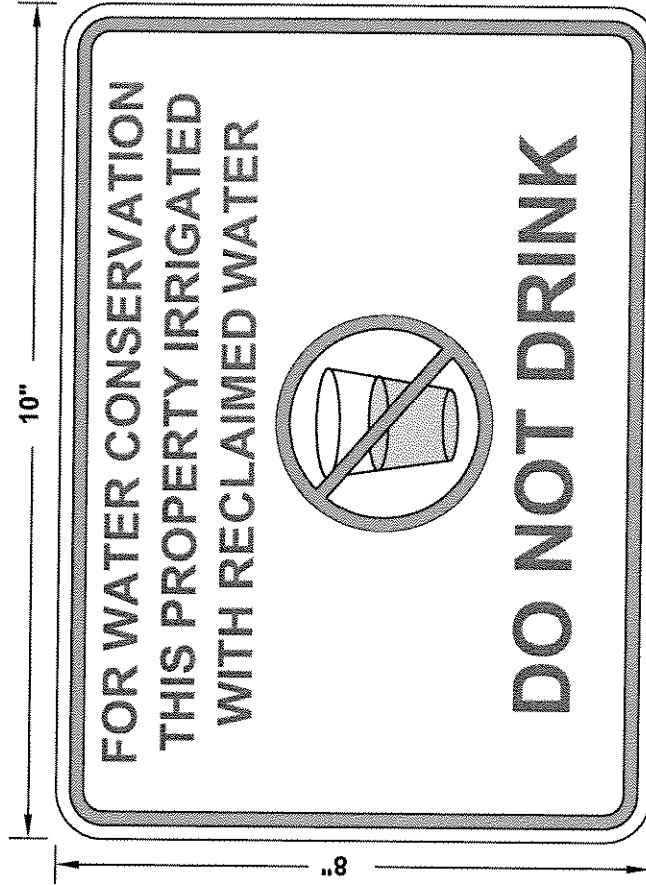
Substitute "VALVE" for valve marker labels

BLACK LETTERING ON WHITE BACKGROUND

| | | |
|---|--|---|
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| LINE/VALVE MARKER LABEL | | |
| BY _____ DSN _____ DWN _____ CK'D _____ | DATE _____ APPR'D _____ DATE _____ | FILE NO. R-34 |




LABEL SIGNS
N.T.S.

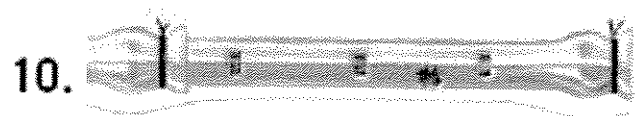
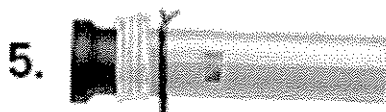
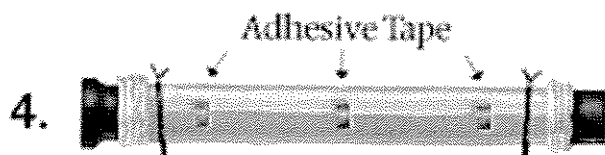
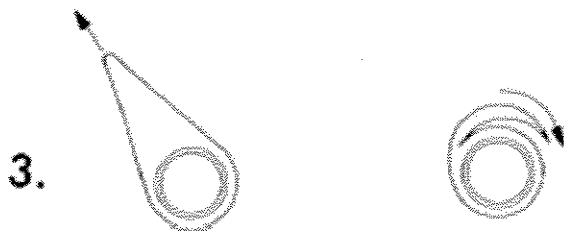
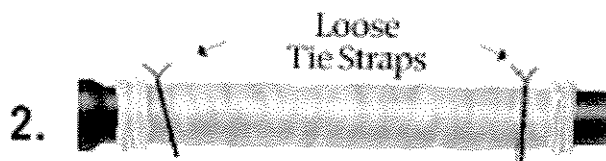


STEEL OR PLASTIC SIGNS
N.T.S.

NOTES

1. SIGNS ARE TO BE PLACED AT EACH USER OF RECLAIMED WATER NEAR THE RECLAIMED METER
2. ALL SIGNS ARE WHITE WITH PURPLE LETTERING (COLOR TO BE APPROVED BY FULTON COUNTY)
3. STEEL OR PLASTIC SIGNS MAY BE AFFIXED TO OTHER POSTS OR STRUCTURES THAN THOSE PROVIDED BY FULTON COUNTY
4. LABEL SIGNS MUST BE AFFIXED TO WHITE DRIVABLE MARKER #CIB-380 (MANUFACTURED BY CARSONITE INTERNATIONAL) AND PROTRUDE ABOVE FINISHED GRADE NO MORE THAN 36" AND NO LESS THAN 18"


| | | | | |
|---|-----------|---|--------|-------------------------|
| FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  | | FILE NO. R-35 |
| CUSTOMER SIGNS | | DSN | APPR'D | |
| | | DWN | DATE | |
| DATE | REVISIONS | BY | CK'D | |

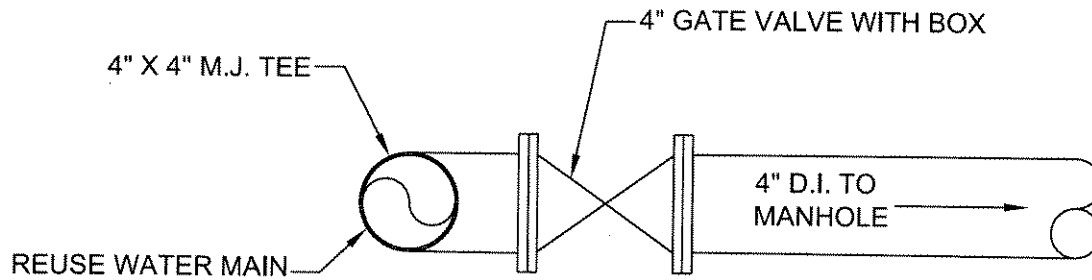


NOTES

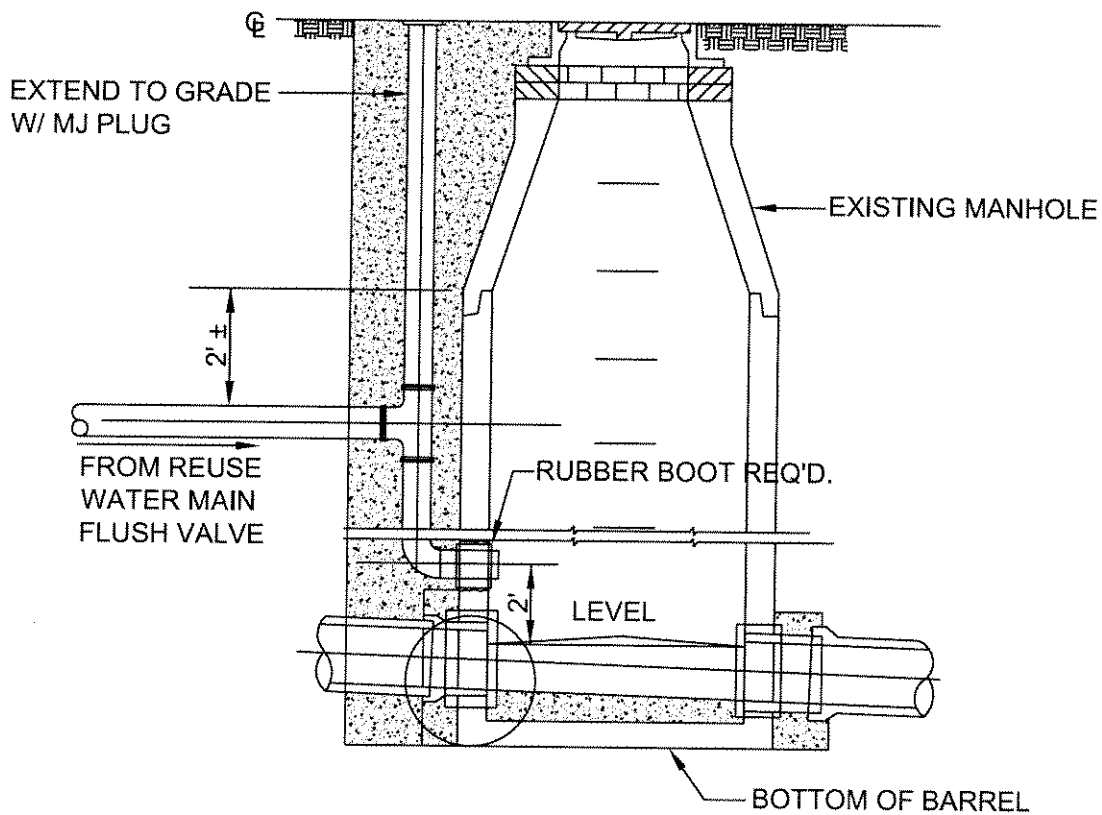
1. REMOVE ALL LUMPS OF CLAY, MUD, CINDERS, ETC. WHICH MAY HAVE ACCUMULATED ON THE SURFACE OF THE PIPE. A POLYETHYLENE TUPE SHOULD BE CUT SO THAT IT IS APPROXIMATELY TWO FEET LONGER THAN THE PIPE SECTION. SLIP THE TUBE ONTO THE PIPE. ALLOW APPROXIMATELY ONE FOOT OF THE TUBE TO OVERHANG EACH END OF THE PIPE.
2. PUSH BACK THE OVERHANG TUBE ENDS UNTIL THEY CLEAR THE PIPE ENDS
3. TAKE UP THE SLACK IN THE TUBE TO MAKE A SNUG BUT NOT TIGHT FIT. FOLD EXCESS BACK OVER THE TOP OF PIPE
4. SECURE THE FOLD WITH POLYETHYLENE COMPATIBLE ADHESIVE TAPE AT SEVERAL LOCATIONS ALONG THE PIPE BARREL
5. DIG A SHALLOW BELL-HOLE IN THE TRENCH BOTTOM AT THE JOINT LOCATION
6. PLACE PIPE INTO THE TRENCH
7. ASSEMBLE THE JOINT

8. PULL THE POLYETHYLENE TUBE END OF THE PREVIOUSLY INSTALLED PIPE OVER THE NEW PIPE AND SECURE WITH THE TIE STRAP FROM THE PRECEDING PIPE BELL
9. OVERLAP THE SECURED TUBE END OF THE NEW PIPE SECTION. SECURE THE NEW TUBE END IN PLACE WITH THE SPIGOT END TIE STRAP
10. REPAIR ALL RIPS, TEARS, OR OTHER TUBE DAMAGE WITH SUITABLE ADHESIVE TAPE. PIN POINT PUNCTURES NEED NOT BE REPAIRED

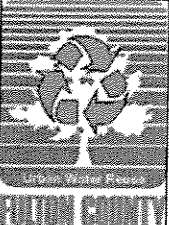
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| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  FULTON COUNTY |
| | | POLYETHYLENE ENCASEMENT INSTALLATION | | |
| DSN _____ | APPR'D _____ | FILE NO. R-36 | | |
| DWN _____ | DATE _____ | | | |
| CK'D _____ | | | | |



CUL-DE-SAC
REUSE FLUSH POINT DETAIL



MANHOLE CONNECTION DETAIL

| | | | |
|--------------------------------------|----------------------------|--|--|
| BY REVISIONS DATE | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |
| | | CUL-DE-SAC FLUSH POINT DETAIL | |
| DSN _____ DWN _____ CK'D _____ | APPR'D _____ DATE _____ |  FILE NO. R-37 | |

FULL ENCIRCLEMENT
TAPPING SADDLE

EXISTING REUSE
WATER MAIN

6" TAPPING VALVE
LEAVE FULLY OPEN
REMOVE OPERATING
NUT OR WHEEL

6" 45° ELL

6" D.I. TO MANHOLE OR
WATER STRUCTURE

6" GATE VALVE
WITH BOX

REUSE TAP AND VALVE DETAIL

EXTEND TO 12" ABOVE
GRADE W/ MJ PLUG

EXISTING MANHOLE

2' ±

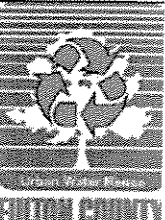
FROM REUSE
WATER MAIN
FLUSH VALVE

RUBBER BOOT REQ'D.

LEVEL

2'

BOTTOM OF BARREL

| | | | | |
|---|--------------|---|--|---|
| BY _____ REVISIONS _____ DATE _____ | | FULTON COUNTY DEPARTMENT OF PUBLIC WORKS WATER SERVICES | |  |
| | | IN LINE FLUSH POINT DETAIL | | |
| DSN _____ | APPR'D _____ | FILE NO. | | R-38 |
| DWN _____ | DATE _____ | | | |
| CK'D _____ | | | | |